

Restoring an Efficient Articulation by Carving.

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I was in the senior year of my college course when it appealed to me that amalgam fillings ought to be carved in such a manner as would restore the teeth to their natural forms and functions.

When I was doing the required technic work, I tried to follow out in a measure the lines of the fissures and planes. At that time it must have been amusing to the instructors, for I can well remember the smile that greeted my efforts.

Again, after graduation, I made the attempt to bring this idea of making the sulci and restoring the various inclined planes as found in the normal teeth, at one of the Iowa Alumni Society meetings, by giving a clinic on a pet inlay method of mine, in which I restored one of the cusps and all of the sulci and the transverse ridge of an upper molar. As I remember, this inlay was not what I would now want it to be, nor was it by any means what it ought to have been; nevertheless, I was contending for a principle.

While this piece of work was being inspected by the older and

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more able members of the profession, and I was defending the principle, one of the men said, "You little upstart, do you not know that all fissures must be finished rounding and never made so deep?"

When the wax pattern method for gold inlays was introduced, I designed and made several forms of carvers, three of which (Fig. 8) I kept for the work, since they seemed to meet my needs better than anything else that I had had or seen. I will describe the technic of their use later.

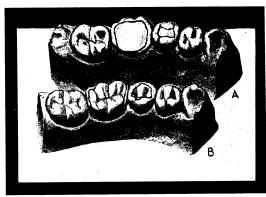


Fig. 1.

I have read with a great deal of interest the paper by Dr. J. Lowe Young on "Restoration of Occlusion by the Casting Process," also the editorials and papers in ITEMS OF INTEREST that have supported the doctrine. I feel that this is just the beginning of a new day in dentistry, both from the dentist's and the patient's standpoint. The gold foil filling is passing, and must pass to give place to more humane methods of It is certainly anything but a longed-for operation on the part of the patient to have an M. O. or D. O. foil filling made in a molar or premolar, to say nothing about the larger restorations. the operator would conserve a good deal of his nervous energy, prolong his usefulness by longer life and more years of service, if less foil fillings were made. For the sake of argument, I will grant that an expert gold operator can make a fine M. O. operation in an upper first molar, with perfect margins and a well-condensed body, but what has he accomplished when all has been completed? How much resistance will this filling offer to the force of mastication? Will it flow and thus leave the buccal and lingual margins? And half a dozen other interrogations might be made.

It is an established fact that when we have done our best we have hammered away on that filling until the tooth is so lame the patient



cannot use it for a week or more with any comfort. Thus we have in a way inflicted an injury to the peridental membrane that may at some future day stare us in the face in the form of gingivitis. It is also a fact that our filling at its best has only a specific gravity of 16 or a little better, and will flow very easily under the force of occlusion, thus driving it from the enamel margins of the approximal portion of the filling.

Have you ever removed an old foil filling of your own, or some one's else, placed it between the beaks of an ordinary contouring pliers and noticed how much this piece of gold can be condensed? Also have you ever taken an inlay, cast after any old process, and treated it the

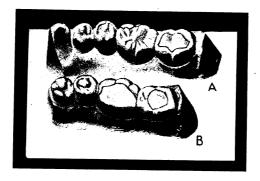


Fig. 2.

same way? If you have, you will have noted what I have observed many times. The inlay offers many times more resistance to this kind of stress than does the foil filling.

By experimental tests it has been found that the specific gravity of cast gold is a little better than 20, but it is well to remember that all metals when cast do not possess the flow that hammered metal does. Especially is this true of alloys, some of which may become quite brittle and refuse entirely to flow; hence an alloy of gold rather than pure gold is to be desired for casting purposes.

Having always had the desire to reproduce the Occlusal Surface. natural occlusal surface in my crowns and bridges, and finding it very difficult or impossible to do so by swaging this surface in 30-gauge metal. I used to swage it out of 34, or, better still, 36-gauge. Then I would make a new die and counter and swage again, thus giving me a sharp reproduction of the carvings. Into this I would swage another piece of 34 or 36-gauge metal and swage them together. This gave me a cap of 17 or 18-gauge thickness, with



nearly as good a surface as can be obtained by casting. This method was abandoned to a great extent when the casting technic became better known.

Mhenever a case was shown where the cusps in a large amalgam filling has been restored, carving in the various inclined planes and having them meet to form a sharp and well-defined sulci, the argument was immediately made, "Amalgam will not withstand such abuse. It was never intended for such contour work. Better make flatter fillings and

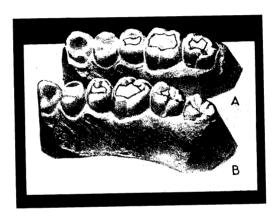


Fig. 3.

of such shape as not to throw any stress upon them during mastication." This argument made me hesitate. One day when I had leisure, a patient happened into the office. She was a poor working woman with two children to support. When asked what I might do for her she asked to have a broken-down upper left second molar extracted. The crown was all decayed as far down as the junction of the middle with the gingival third. It was offending her in that it kept the tongue and cheek irritated. After quite a little talking, she agreed to allow me to restore this tooth with amalgam. This I did, being very careful to carve in all the sulci, bringing out the cusps as prominent as any in her other teeth. I saw this tooth at different times for four years, and found it to be giving perfect satisfaction. Patient's age, over forty years.

In prosthodontia, the operator, when he wishes to do exact and scientific work, desires to know the plane of the mandibular joint, also how prominent the *tuberculum articularis* may be, for this is in part to determine the arrangement of his teeth, the relationship of the cusps and fissures. He would not be doing his best if he ignored these. The man



working in the operative field must also recognize the influence that this part of the human anatomy has to offer in the way of help or hinderance. Here I wish to make a point that I have never before seen in print. That the slope of the various inclined planes, depths of the sulci and prominence of the cusps is governed by the inclined plane of the articulating surface of the mandibular joint, together with the action of the discus articularis in which the condyloid process of the mandible rests. For, should we find upon measurement that this path is at an angle of 15° to the occlusal plane, the sulci will not be deep, nor will we find such prominent and pointed cusps. Should we find this incline plane to be

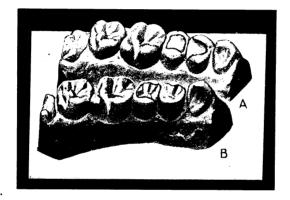


Fig. 4.

50° to the plane of occlusion, we may expect to find very deep sulci with prominent cusps. If the arch and arrangement of the teeth are in relation to the triangle of the mandible, no matter what age the patient may be, twenty-five or sixty-five, the cusps will remain the same, the sulci and inclined planes as deep and sharp as ever. It is only when the normal has been interfered with in any way that we get wear on these teeth at the expense of the cusps. The Almighty knew what He was doing when He made cusps and sulci, and thought they were needed, and, in my opinion, the dentist who intentionally obliterates either is guilty of willful malpractice. His intention of doing that patient a benefit proves in reality an injury. I hope the time will soon come when such mutilation will not be looked upon with indifference by the profession.

Fig. 6 shows three teeth extracted by the author from the jaws of an old man over sixty-five years of age. The teeth were lost by the excessive deposit of salivary calculus. In these you will be able to note that the occlusal surface, though it is worn by long years of use, still has its sharp sulci and planes leading to sharp and well-defined cusps.



If you could examine the amalgam filling in the distal half of the main sulsus, you would note that the planes terminated in this filling at a sharp angle to each other, due entirely to wear and not the operator.

"Strive only for a good, substantial occluding Mrticulation. Surface." That sounds well at first, and many seem content to stop at that. Why not get an articulation as well as an occlusion? We may have a perfectly occluding set of teeth that will be as utterly valueless for mastication as so many blocks of flat ivory. We must have articulation, so that when the cusps touch cusps of the opposing arches on the one side, the inclined planes join to

form the rectangular groove in which the food is held and crushed when

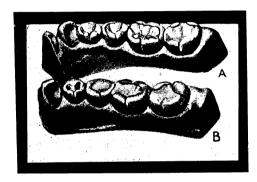


Fig. 5.

these cusps slide down along each respective plane. If the buccal cusps only occlude, this groove will be open on the lingual and the food will slide out without being crushed. If the sulci have been filled up, this groove will be a deal smaller, thus decreasing its efficiency; also when the opposing cusp is sliding down the inclined plane it does not need a flat opposing surface, but slides off on that rounded area occupied by the filling thus reducing the efficiency. In either case we have good occlusion, but no articulation. Many times the statement has been made, "The bottom of the grooves when normal are never reached by the cusps of the teeth of the opposing jaw." I know full well that some very able and eminent men hold this view and that it is so stated in text books of the day, yet I maintain that if the teeth are in normal articulation (by which I mean that they must bear correct relation to the type and size of arch required, for the type and size of triangle as shown by the mandible) the opposing cusps always find the bottom of the sulci and the inclined planes will wear upon each other, leaving them to form sharp angles for the bottoms of sulci. (See Fig. 6.) These teeth



were worn for over fifty years. In this collection you may see an old amaigam filling in the lower second molar, where the wear cut a sulcus in the amalgam. I could cite many cases to prove the statement.

Cases From Practice.

Fig. 1. Here I wish to call your attention to a large amalgam restoration (?) in the lower first molar, involving the entire occlusal and lingual. It is evident from the illustration that the operator had a fear that his work would not endure unless he made a toboggan toward the lingual. In the bicuspid will be seen a very common pit and fissure filling; in fact, both of these operations are of the usual kind. I think it needless to say

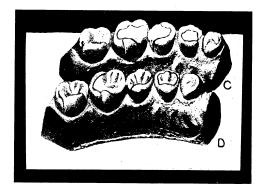


Fig. 5.

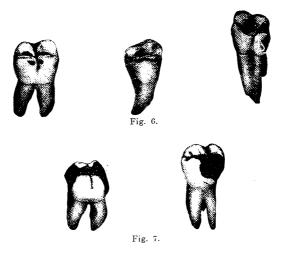
more than that these teeth, especially the first molar, are 50 per cent. or more below normal of efficiency. Fig. 1, B, restored with amalgam, is far more efficient, to say nothing about being more artistic.*

*Because of the difficulty of photographing plastic casts on which inlays are colored, we have here tried using an outline in pencil.—Ep.

This shows an amalgam filling in a lower first molar and a small filling in the second molar. These two operations were made by a very thorough operator; he had restored the lingual wall, building what makes fair lingual resistance to the lingual surface of the upper teeth. The patient did not complain about the work, simply stating that somehow he had difficulty in chewing on that side. The fact is, food cannot be comminuted by "grinders" that have been mutilated by caries and not restored by the operator to their once useful surface shape. Contrast Fig. 2, A, and Fig. 2, B. In my humble opinion, the last cast shows teeth that will thoroughly comminute the food.



This shows two foil fillings, one in the second molar and another in the second premolar. Neither one is large enough to give much offense. The first molar contains a very large occlusal cast inlay. These three operations were made by an "old-timer." It is this kind of work that makes patients complain about their teeth feeling as though they were made of rubber. In this case (a young man of twenty-three) we could see the evidence of incipient gingivitis around this first molar and the mate on the other side, it having a similar inlay. From study of such cases, I



firmly believe that many cases of pyorrhea can be traced to a mutilation of the occlusal surface. Fig. 3, B, shows the case properly restored.

A cast of a young man in which the two premolars have been operated upon. A disto-occlusal cast gold inlay in the first premolar, and a foil filling in the occlusal surface of the second premolar. Both of these operations were made by recent graduates from one of America's leading dental colleges. The mouth shows beautiful natural teeth, with pits, fissures and ridges well defined. We took out the two fillings and restored these two teeth to their normal, as seen in Fig. 4, B, with cast gold inlays.

While operating for a young lady several years ago I restored the two lower first molars to their former usefulness with two large mesio-occlusal cast gold inlays. Some one had placed a shell crown over each tooth. Fortunately for us, the teeth had never been ground. When the inlays were in position and finished, the patient was admiring them and remarked, "Why, Doctor, those fillings have wrinkles in them, just like



my other teeth." It is safe to say that the average person fully appreciates an artistic piece of work.

In a study of the cases shown in the illustrations I think it needless for me to state that these teeth were not performing their function and that their efficiency had been greatly impaired, if not entirely destroyed. For where the rectangular groove cannot be made and food caught within its bounds, so that it may be held and crushed, real mastication cannot take place.

Fig. 5 shows a case in which both the upper and lower molars and premolars now contain large Fig. 5. restorations made in amalgam. The illustration shows before and after treatment. The upper second molar will give some idea as to what the teeth looked like before they were decayed and then restored (?) to their usefulness. These fillings, viewing them from whatever point you may desire, were anything but what they should have been, judged from the point of workmanship, usefulness, mouth hygiene and science. The interproximal spaces had been sadly neglected and the contact, instead of a point, was a surface that took in one-third to one-half of the tooth, but the principal thing I want to call attention to is the beautifully polished and flattened occlusal surfaces. This patient, instead of having received benefit aside from the arrest of decay, had received untold injury. In thus obliterating all the sulci, the bite had been raised on both sides. The patient was uncomfortably conscious that something was not right, for the pleasure of mastication had become hard work, the reason of which is self-evident. Could anything be done to restore this masticating apparatus to its former usefulness? By viewing the work shown in Fig. 5, cast B and D, you will see what has been done far more effectively than words can tell. I am sorry you cannot see the plaster casts and still more sorry that you cannot see the patient.

I could multiply these cases many times, as each man who is practicing operative dentistry can, but I feel that it is not necessary. It simply would be drawing too much upon your time.

Stress During Mastication.

What stress must the occlusal surface of a tooth in the ordinary individual withstand? I shall not try to answer it definitely, since it is a disputed point, the answers ranging from 150 to 400 pounds crush-

ing pressure. In some cases this amount has been exceeded even to a point as high as 600 pounds but under ordinary conditions of mastication it is reasonable to presume that the stress a filling will have to withstand will range from 200 to 300 pounds. Since a good amalgam will withstand a pressure of from 300 to 450 pounds, when the technic

Ttems of Interest

of preparing the amalgam and of making the filling has been observed, we need not fear for the strength of the filling, even after it has been carved to the proper articulation. Gold, of course, is beyond this question, since it will withstand more pressure than amalgam.

Always observe the articulation before beginning the operation. After the rubber dam is in Amalgam Restoration. position and the cavity has been properly prepared, the matrix should be cut and fitted to place, then securely fastened to allow the proper condensation. I always overfill somewhat, working the excess mercury, if any, to the surface. While the filling material is beginning to harden, I immediately proceed with the carving, using the three instruments shown in Fig. 8. The two, right and left, are used for cutting the sulci from buccal to lingual, and can be used to some extent in working in the main mesio-distal sulcus, though I prefer to use the one where the blade sets at right angle to the shank of the instrument. The cutting edges of the blades set at an angle of 90° to each other for ordinary purposes, I have another set where the angle is somewhat more acute, 80°, which I use for teeth that have very deep sulci. The blades are wide enough and their edges long enough to cover the distance from the one margin to the other and still rest on the tooth, thus insuring a clean margin to the filling.

For example, let us consider a lower first molar. Cut in the mesiobuccal sulcus to the central fossa first, then the lingual. From here the operator may proceed mesially or distally; I prefer to cut the mesial half of the main sulcus next, then lastly the disto-buccal and distal sulci. The lower second molars in Figs. 2, B, and 5, B, show the main sulci worked in without the supplemental sulci. These main sulci should be carved first. If you have carefully noted the articulation beforehand, you will not need to fear that the filling is too high. Of course, if one or more cusps have to be restored. I remove the dam and finish carving the filling to the proper articulation by occasionally trying it with the opposing teeth. This procedure will give a nicely burnished surface to the amalgam, but should you desire to give it a lustre, you may do so by the use of chalk and a hand wood-point polisher. A polisher revolving in the engine hand-piece is not to be used, though a careful use of a soft-brush point may help. But unless it is very carefully used, damage to the amalgam filling will be done.

The technic of carving the wax pattern for the gold inlay is the same as for the amalgam, with this caution: Do not use any heat on the instruments and use a good quality of hard wax, for then the surface and sulci will come out bright and sharp. Then, by going over it with cotton soaked in cadjiput oil, and vesting in good investment, the inlay



will come out in such fine shape that a wood point with pumace and chalk in a hand-polisher will give it a desirable finish.

As soon as it is perfected, I will offer to the profession an instrument that will be found ideal and rapid for this kind of work, also for prophylactic work. I am sorry that I cannot show it here in connection with this article.

In conclusion, it has frequently come to me in the form of an argument, "Gold fillings are not desirable" because patients complain

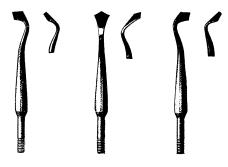


Fig. 8.

of a sensation as though they were chewing on rubber, and the food gives away under the stress of mastication.

Viewing the situation as it has existed to the present, and bids fair to exist for some time to come, we will agree with the above argument against gold. What may we expect from an articulation that has been crippled by the partial, if not entire, obliteration of the rectangular groove? I have noticed that, after the correct form of the occlusal surfaces of the teeth had been restored, even to the extent of a four-tooth posterior bridge, no such criticism as the above was offered.

Compare with me the three teeth shown in Fig. 6, which show very distinctly the sharp sulci and perfect inclined planes, even after fifty-five years' wear in the mouth of a tobacco-chewer, with the two teeth shown in Fig. 8, which were recently extracted by a member of the profession while I was administering the anesthetic. These teeth show amalgam fillings made by two good men in Denver, Col. I did not choose these two teeth because of the conspicuous work done in them, for they represent fairly well the average, no matter from what viewpoint the operation may be considered. The illustrations of some of the casts shown bears out the point also.



I believe that nearly 70 to 80 per cent. of the so-called pyorrhea alveolaris is due to faulty operative and prosthetic procedure, and from this percentage from 40 to 50 per cent. of all the mechanical causes may be traced to an obliteration of the cusps, sulci and inclined planes, which are an absolute necessity. If it was not so, the Almighty and Wise Heavenly Father would not have created the human masticatory apparatus as we find it in all its beauty, before decay and the hand of dentistry has touched it.





Positive Method of Repairing Facings on Euspid Bridgework in the Mouth.

By BERTRAM B. MACHAT, D.D.S., New York.

To the many triumphs accredited to the casting system in dentistry, the most inexhaustible fountain from which modern dentistry is drawing the secrets that already have solved so many problems in its practice, must be added also the practical solution of restoring posterior fractured facings on cusped bridgework in the mouth.

Without exception, nothing has proved a greater cause of chagrin to the patient, and material loss as well as vexation to the dentist, than the fracture of a facing on a well-constructed and properly mounted bridge. Ofttimes the operation of restoring this proves too difficult and expensive to be practical. The patient thus goes about discrediting the dentist and the profession.

Various methods have been devised to remedy this evil, but with limited success. That is to say, limited to anterior or uncusped teeth only, as the Bryant system, the Stede repair outfit, etc.

The introduction of several varieties of interchangable teeth and their gain of popularity with dentists has been the direct outcome of disappointments and the incalculable loss of the independable flat-back or plate tooth.

We will not here enter into the numerous causes that are responsible for the fracturing of plate teeth or facings, either during or after operating. Suffice it to say, that it is a condition that presents too fre-

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quently to be ignored, and we must therefore cope with this problem in a manner thoroughly operative instead of as heretofore, speculative.

The method which I am about to introduce is not of yesterday, but the product of nearly three years of experiment and experience, during which time it has been found almost universally applicable for all posterior cusped bridgework, and I desire to characterize this the "Machat Method."

After grinding the space to be restored flat, we take a suitable right angle bur and cut a vertical groove or slot in the body of the bridge to a depth (bucco lingually) consistent with the thickness of the same, and

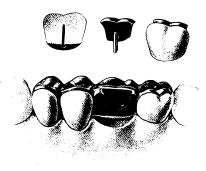


Fig. 1.

width not exceeding about two-thirds of the whole space to be restored. The slot is cut so that it has parallel vertical undercuts at the anterior and posterior extremities, and may preferably be so prepared as to be very slightly broader at the morsal end (Fig. 1).

A suitable Steele tooth is now selected, and together with its backing ground in to fit the case as desired; several small holes are punched in the backing and replaced upon the tooth. It may be simpler to take, instead of the backing, what is known as a Steele Post (sold at dental depots), and place that within the facing and grind in together. A little inlay wax is now melted on the lingual surface of the backing or post and facing and pressed home into the already prepared groove in the bridge, taking care that the wax covers the entire surface and also overlaps upon the occlusal surface slightly. The Steele facing may now be removed and the surplus wax carved so as to leave none overhanging or wedging, after which the facing is again replaced; a sprue warmed and applied to the morsal end of the wax pattern and the latter with the facing is carefully removed from the slot. The facing is now peeled off and the wax pattern with the backing or post thereon mounted upon a sprue former and cast, prefera-



bly with clasp metal gold. The finished casting is replaced in the bridge, the tooth mounted and the whole properly trimmed and polished, after which it is cemented to place. Wherever indicated after the slot has been prepared, a wax mould representing the tooth and plug *en masse* may be carved and cast and mounted.

Summary. Cusped bridgework in the mouth is thus found to be: Simple in technique; universally applicable; permanent; clean; requires inconsiderable time by the operator; above all, is a means of encouraging aesthetic work, and thereby eliminating the unsightly "gold tip."





American Society of Orthodontists. Discussion of Dr. Federspiel's Paper.

Dr. Martin Dewey, Kansas City, Mo. Yesterday 1 made the statement that six months is long enough to retain teeth if we have the proper development of bone, but since listening to Dr. Federspiel's paper, and the wondrous things which

he claims the pituitary body causes, I have decided to give extract of pituitary body and retain the teeth only six days. But laying all joking aside, there is no doubt but that certain diseases of the pituitary body does cause abnormal development of the bone, and that the removal of the body experimentally produces characteristic results. believe that very few of the malocclusions which we find, in fact, I believe none that I have ever seen are the result of diseases of the pituitary body. Dr. Federspiel showed several cases which had been diagnosed as pathological conditions of the pituitary, and one thing which I could not help but notice is that there were other deformities besides those found in the mandible. Therefore I do not believe that in those cases in which we find an overdevelopment of the mandible, that we can lav such a condition to the pituitary body; for if it has produced overdevelopment of the mandible, there would be overdevelopment of some of the other bones. He also called attention to a paper which he read several years ago and seems to think that some cases of malocclusion are caused by overgrowth of the mandible, but I believe that there is little evidence to support that point of view. I believe that the overdevelopments of the mandible which Dr. Federspiel showed, in the extreme cases of those young men, had been the result of the malocclusion of the teeth, which



produced abnormal forces that caused the mandible to become overdeveloped. In other words, the overdeveloped mandible is the result of the malocclusion and not the cause of malocclusion.

In regard to the relation which the temporo-mandibular articulation plays in malocclusion, my studies of cases and skulls lead me to believe that in the majority of class II and III cases, or distal relation and



Fig. 1.

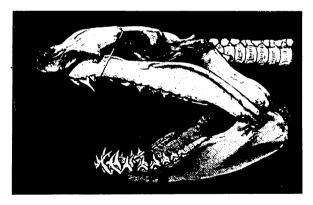


Fig. 2. Shark.

mesial relation of the lower teeth, that the condyle occupies the same mesio-distal relation that it does in normal occlusion. There may be a few mesial relations which have been the result of partial luxation, but they are rare, compared to the class III cases in which the condyle occupies its proper position. I do not believe that the condyle is of the same shape in all individuals, nor that it travels in the same plane in all cases, for one would learn otherwise who examined a few skulls or measured the paths of a few condyles. The reasons for this difference in shape and difference in paths lays in the occlusion of the teeth. The

teeth have been the factors which have caused the condyles of different people and animals to assume different shapes. In a paper I read before the National Dental Association at Denver upon "The Relation of the Cusp, Contact Point, and Temporo-mandibular Articulation," I made the statement that the development of the temporo-mandibular articulation depends upon the occlusion of the teeth. That the depth and shape of the glenoid fossa with the shape of the condyle depends upon the length





Fig. 3. Crocodile.

of the cusp, and that the width of the condyle depends upon the width of the teeth.

I will not give you that entire paper, but as Dr. Federspiel took up the development of the temporo-mandibular articulation, I will only speak of that phase of the subject and show you how occlusion has effected changes in some cases.

Beginning with comparative dental anatomy, for we find the same rules working there that work in man; I will show you the skull of a rattle-snake (Fig. 1). The teeth are conical, with a highly developed poison apparatus and shaped for prehension and deglutition. The temporo-mandibular articulation is shaped to allow the animal to swallow large objects; there is no occlusion of individual teeth, yet the shape of the teeth and the function to which they are put causes the loose articulation of the bones of the lower jaw with the cranium.

Next we have the jaws of a shark (Fig. 2). The teeth are not so long, the food is not swallowed in such large "chunks," but there is no occlusion of individual teeth. The condyle and glenoid fossa is poorly



developed and is very much the same as is found in any of the higher animals. If you pass to the higher reptiles you find a greater development of the temporo-mandibular articulation as the functions of the teeth increase. An interesting example is found in the alligators and their cousins (Fig. 3), for in them conditions have been such as have caused the glenoid fossa to develop on the ramus and the condyle on the temporal bone. Owing to the short legs of the animal and the long

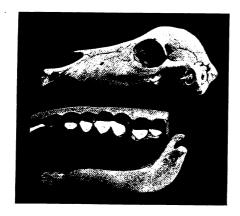


Fig. 4. Foetal Horse.

jaws, the mandible is so close to the ground that it is impossible for the animal to open the mouth except by moving the entire head.

In the mammals, the condyle develops as the teeth erupt and come into use, and as they are lost, the temporo-mandibular articulation changes. A good example of this is shown in a series of horse skulls which are in the American Museum of Natural History, in New York. I will show you but three. Fig. 4 shows the skull of a male foetal horse at the fifth or sixth month of foetal life. The teeth have not played any part in the development of the temporo-mandibular articulation, which is shaped as all such parts are; as the result of years of development in the animal kingdom. The condyle which we find here is very much the same as we would find in a foetus of a carnivora before birth. It is very much the same as is found in the human, which I will show you later. The point I wish to make here is that the condyle in any family of mammals does not take the shape characteristic of the adult animal until the teeth erupt. Fig. 5 shows an adult horse in which the condyle is typical of those animals. In the old horse (Fig. 6) the teeth are being worn down and with the loss of occlusion the condyle is changing.

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Another species of animal which has a decided use for the teeth is the beaver. A beaver (Fig. 7) without teeth would soon be no beaver at all. The life of the animal depends upon the teeth. In fact, that is true of most of the lower animals, yet we find people who think man does not need any teeth. But this is not a lecture on oral hygiene. We

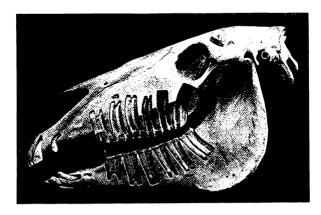


Fig. 5. Horse; age 5 years.

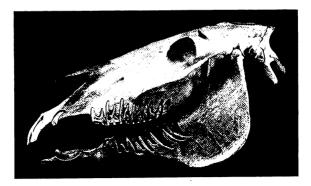


Fig. 6. Horse; age 27 years.

observe that the condyle of the beaver is round, the glenoid fossa is lengthened antero-posteriorally, and the ligaments are so attached that the mandible can be protruded so as to bring the incisors together, which teeth do not touch when the molars are in occlusion. So the temporomandibular articulation is greatly modified, for the teeth perform a function which they are called upon to perform only in those animals with the scalpiform incisors. The shape of the condyle is characteristic of



animals which do a great amount of gnawing with the incisors. I have a skull of an old person, who lost all of the molars and premolars and masticated on the anterior teeth and the condyle assumed the same shape as is found in the beaver. Instead of being wider bucco-lingually it is wide mesio-distally.

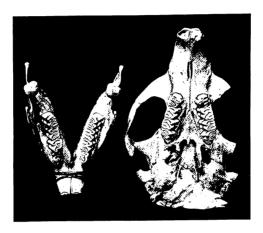


Fig. 7. Beaver.

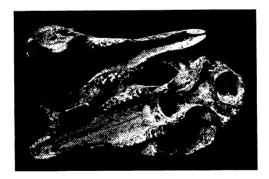


Fig. 8. Kangaroo.

In the kangaroo (Fig. 8) we have a lateral movement of the mandible instead of the antero-posterior movement as seen in the beaver. The difference in the condyle is easily seen.

Passing to the mountain lion (Fig. 9) we find a deep glenoid fossa and a narrow condyle antero-posteriorly. The greatest diameter of the molars and premolars is mesio-distally and the greatest diameter of the condyle is bucco-lingually. This rule holds true in all animals; the



greater diameter of the condyle will be the reverse of the greater diameter of the molars and premolars (Fig. 10). The occlusal view of the mountain lion shows this. The long canines make an up-and-down movement of the mandible necessary and the condyle and glenoid fossa has assumed a shape to make that possible.

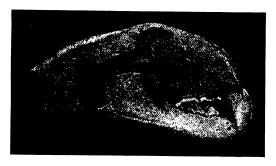


Fig. 9. Mountain Lion.

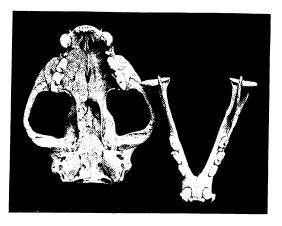


Fig. 10. Mountain Lion.

In Fig. 11 we see the teeth of a rattle-snake; decidedly conical teeth, in which the whole dental apparatus is one that is highly specialized so far as the poisoning apparatus is concerned, and the temporo-mandibular articulation is developed for prehension. We see nothing in the nature of a distant condyle.

The effect of the teeth on the temporo-mandibular articulation in animals closely related, is shown by comparing the wild hog of Mexico (Fig. 12) with the domestic hog (Fig. 13). These animals greatly resemble each other, but the long canines which still develop in the wild

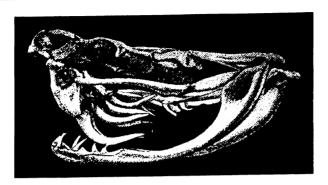


Fig. 11. Rattlesnake.



Fig. 12. Wild Hog.



Fig. 14. Cave Tiger.



Fig. 13. Domestic Hog.



hog as a means of defense, have caused the temporo-mandibular articulation to greatly resemble the carnivorous animals. The domestic hog having been removed for the necessity of protecting himself, has his food provided for him; the canines have ceased to develop as organs of defense and the condyle resembles an herbiverous animal. These changes have been the result of the different development of the teeth.

The extent to which the development of a tooth may influence the development of the bones necessary to its function, is shown in the cavetiger (Fig. 14), an extinct animal of North America. The great length



Fig. 15.

of the canine made it necessary for the entire temporo-mandibular articulation to change, and the mechanical stimulation of the great upper tooth caused the bone to develop on the mandible to support the tooth.

In man the temporo-mandibular articulation changes in response to the same influences as it does in the lower animals. It is made up of a number of parts which must be taken into consideration when discussing any changes that may occur. Besides the condyle and glenoid fossa, we have the external capsular ligament which is a white inelastic ligament which envelops the entire articulation. It spreads around the glenoid fossa and is attached at the neck of the condyle. There is the stylohyoid ligament and the spheno-mandibular ligament which are also white inelastic ligaments which run from the styloid process and the spine of the sphenoid to the mandible. These ligaments are of such a nature that they do not change as rapidly as the bone. Fig. 15 shows the anatomy of the temporo-mandibular ligament dissected out and is a cut taken from Piersol's anatomy, as is the cut showing the stylcid process and ligament. Owing to the extreme inelasticity of the ligaments of this joint, any change that occurs in the bones must occur without disturbing the attachments or length of the ligaments.

The condyle in man does not assume a definite shape until after the teeth are in occlusion as shown in Fig. 16. The final shape of the articulation depends upon the occlusion of the teeth. If all the teeth



are present and in normal occlusion we will have a mastication apparatus and articulation as shown in Fig. 17. Fig. 18 shows a mandible which has different shaped condyles on the two sides. Owing to a malocclusion, the individual masticated only on one side. Fig. 19 shows three condyles, all of which have different shapes, owing to the different man-

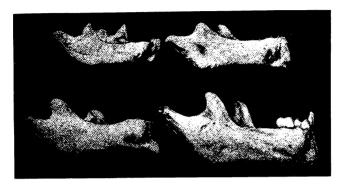


Fig. 16.

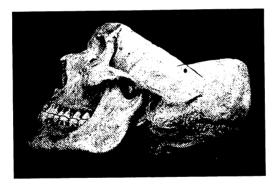


Fig. 17.

ner in which the owners of them masticated. These changes which occurred in the condyles were such as could occur without the ligaments changing.

If you will look at Fig. 17 and note the position of the condyle in relation to the external auditory meatus, the styloid process and the mastoid process, you will have a good idea of what those parts are when normal. The next skull is one from Dr. Cryer's collection and shows what may be considered a normal relation of the parts (Fig. 20). It was necessary for the individual to masticate only on one side, with the result that the condyle changed in shape, but not in position. There was absorption of

the eminentia articularis as well of the condyle; but in addition to those changes there was a building of bone on the posterior end (Fig. 21), which gives about the same relation of the posterior end of the condyle to the styloid process and external auditory meatus as was seen on the other side. On the abnormal side there was a shortening of the neck



Fig. 18.

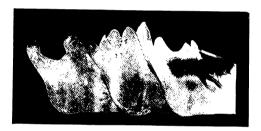


Fig. 19.

of condyle which would be necessary as the ligaments would not stretch. The changes which are produced by the occlusion of the teeth are similar to those produced by malocclusion.

I have stated that I do not believe that the condyle changes position in Classes II and III. There has been little evidence given to prove anything either way. However, there is a skull (Fig. 22) in which we have a decided case of malocclusion. The lower teeth are distal to the upper, but the condyle occupies the same position as is found in the skull (Fig. 17) with normal occlusion. The ramus is short and the body of the mandible is underdeveloped. The abnormal condition exists in the mandible below the external capsular ligament. In a Class III case, all of the lower teeth are in mesial relation to the upper (Fig. 23). The mandible is overdeveloped because of the malocclusion of the teeth. The condyle occupied the same position as we find in the normal skull and in the skull with the class II case. While it takes more than two or three skulls to prove anything, I believe that a great deal of knowledge can be gained if we can examine a number of skulls which are known to



have the mandible with them that nature put there. Therefore, in closing, let me state my position again. I believe that the shape of the condyle and the development of the mandible depends upon the occlusion of the teeth. Also that the position of the condyle has little to do with the distal or mesial relation of the teeth. Furthermore, that the lack of development of the mandible and the overdevelopment of the mandible



Fig. 20.

occurs at points below the external capsular ligament. And lastly, to prove anything in regard to the changes which occur in Classes II and III cases, a large number of skulls must be studied and something given besides theories.

Trederick C. Kemple, ing pictures, beginning with apparently normal individuals. The next picture showed these same persons to be slightly deformed, the next one worse,

and the next one still worse, until they were horribly deformed. He showed pictures of several cases of progressive deformity and says, "this is simply the effect of the condition of the pituitary body"; they were all produced through some abnormal condition of this organ. I would like Dr. Federspiel to tell us how he knows that these conditions are entirely produced by pathologic conditions of the pituitary body. I have had the impression for a long time that the function of the pituitary body was somewhat mysterious. I did not know that its function had been satisfactorily established.



Dr. Eischer, St. Louis. I regret very much that I have not had a chance to study this paper, because it is a subject in which I am very much interested. It is a continuation of the argument which the essayist presented in his paper

at Boston, wherein he accepted the terms I suggested for certain types of malocclusion, and analyzed the basis that I offered for these terms,



Fig. 21.

viz.: malposition of the teeth, malrelation of the dental arches, and malformation of the jaws. To these he would add malposition of the mandible. That appealed to me at that time and does now, and ever since then I have been observing patients more carefully when I make a diagnosis. I will admit that at times it is rather difficult to say whether a case is a distoclusion, or whether it is a mandibular retroversion; a mesioclusion, or a mandibular anteversion. These conditions may, it seems to me, blend by imperceptible gradations. As I said yesterday: whether we like it or not, it is our duty to work out the morbid anatomy of every type of dento-facial deformity. We must extend our observations beyond the study of occlusion and malocclusion as shown by plaster casts and by mere photographs of patients. It is our duty to make observations beyond that and to include the study of skulls of human beings in whom these typical oral deformities exist.



I believe Dr. Federspiel has undertaken a very important and fundamental work, and I urge him to continue it. I can conceive of no valid reason why jaws may not be abnormal in development, or growth; why a mandible may not be malposed in its relation to the other structures of the face. And if this is possible, as I confidently believe it is, it is of greatest significance to orthodontists.

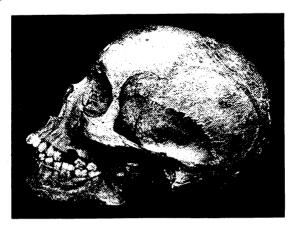


Fig. 22.



Fig. 23.

Dr. Kemple.

Wister Institute of Anatomy, at Philadelphia, a few years ago. In one of the mandibles the third molar was erupting partly back of the anterior border of the ramus. Looking at the mandible in profile, only about one-third of the third molar showed

in front of the ramus. In the other mandible all of the third molar showed in front of the anterior border of the ramus. In these two mandibles the one that showed the whole of the third molar in front of the ramus seemed to be well developed and the one that showed only one-third of the third molar was an undeveloped mandible. The strange thing about these conditions is that the one that was an undeveloped mandible was a Class III when articulated with the skull, and the one I thought was a well-developed mandible was a Class II when articulated with the skull. There are stranger things in orthodontia than are dreamed of in our philosophy.

Dr. Ottolengui.

Were these mandibles attached to the proper skulls?

Dr. Kemple.

Dr. Federspiel.

I think they were.

(Closing the discussion): Dr. Kemple asked a question regarding the pituitary body. I would suggest that Dr. Kemple look up and study the work of

Dr. Cushing. He has been observing the action of the pituitary body. The point that I want to bring out is that we have to look further than an inclined plane when we wish to make a diagnosis of malocclusion and dento-facial deformities.

I am glad Dr. Dewey discussed the subject, but notwithstanding that my work is experimental, I am satisfied that the temporo-mandibular articulation is subject to variations in shape and position during the period of tooth eruption. It is a difficult matter to obtain specimens of the temporo-mandibular articulation. I had a splendid case I would like to have shown, but it was taken away from me by the parents of the child. It was a typical mandibular retroversion, the glenoid fossa was large and shallow.

In order to obtain a better understanding of the development of the temporo-mandibular articulation in its relation to malocclusion it is necessary to make a large number of dissections in children. Comparing the same to cases wherein the relation of the teeth are normal as well as the adjacent structures.



Che Use, Dangers and Limitations of Nitrous Oxide and Oxygen.

By HENRY B. CLARK, D.D.S., St. Paul, Minn.

This paper with slight changes has been read at the Winnipeg, Man., Dental Society, The Southern Minnesota and South Dakota State Societies, and before the Alumni Association of the Xi Psi Phi Fraternity of the Twin Cities.

The use of nitrous-oxide is, of course, old, but as the methods employed at present are comparatively new, a little as to the possibilities and probabilities of the newer methods may help some beginners in this branch of our work. The person who does one thing only, naturally learns more of that one thing than the one who does that thing only occasionally, and I have presumed to come here and read this paper in the hope that I may be able to tell you something of this one thing which I do, which may interest and serve you.

I shall assume that you are familiar with the history of anesthesia, and only refer to that as it may have a bearing upon the methods in use at present. I think I am right in assuming also that those of you who are interested in gas anesthesia have the newer apparatus with oxygen tanks and nasal inhaler, and that you think you have safer anesthesia than you had with the old outfit for giving straight nitrous-oxide, which you have up to a certain point.

I want to remind you, however, that where nitrous-oxide has made its enviable record for safety, and I might add lack of after-effects, is where it has been given with all air excluded, or by whatever method so that the anesthetic has been discontinued when operating commenced. You may push nitrous-oxide almost to the limit, if you then discontinue it and begin extracting teeth. The reflex stimulation resulting from operating will enable the patient to throw off the effect quickly if given

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a chance, but if it is pushed too far and continued without sufficient oxygen you soon arrive on dangerous ground.

Until quite recent times but few men have used the newer methods, and these have been mostly men who by constant effort and practice have become very expert. Properly given in correct proportions, I cannot but feel it to be absolutely safe; in fact, it has so proven itself.

It is the incorrect administration, coupled with a lack of realization of danger, which we must avoid. Many of the older men, even at present, continue in the old way with straight gas and face inhaler, and it is this work and these methods that have so often been referred to as the record of gas—as to to its safety. I uo not advocate that the old methods be continued; quite the contrary. I constantly use and advocate the use of the newer ones, but I wish you to realize that one should proceed with some caution in the beginning with these newer methods; to warn you against accepting as gospel all you hear about gas from inexperienced men. I want to emphasize that an element of danger is present when anesthesia is maintained for any considerable length of time. which danger does not exist when a patient is only brought to complete anesthesia and immediately allowed to recover. I am, of course, referring to gas anesthesia. When straight gas anesthesia is used the patient is not ready for operating until a more or less pronounced snoring is heard and twitching of the muscles of the extremities and sometimes of the neck is seen, a sort of short, jerky movement all over. If everything is working right this condition may usually be produced, a tooth or teeth extracted, and the patient be conscious again in the short space of two minutes. I feel sure, many, many times failures are due to beginning to operate before the patient is asleep.

In using the nasal inhaler for operations in the mouth, one may get the patient to sleep with the face inhaler with the mouth prop in place, then begin operating and have an assistant continue with the nasal apparatus; or, if he begins with the nasal inhaler, it is well not to place the prop until the patient is partially anesthetized. If the prop is not placed until the patient is partially anesthetized, it is well to tell him you are going to place it after he is partly asleep, or he may become excited when you do so, thinking you are going to begin operating when you place the prop. It is also well to hold something over the mouth until nasal breathing is established, or even until anesthesia is produced.

Apparatus.

It is not necessary to buy a new gas and oxygen apparatus every time a new one is placed on the market. One can get good results with almost any sort of apparatus if he knows how, and if the apparatus lacks some



essential points, with the application of a little ingenuity and the assistance of a mechanic the operator can alter it to meet the requirements of a successful one. One essential is a large, free passage for the gas in the tubing and valves leading to the inhaler. One well-known apparatus was never a success until recently, and now is one of the best ones to be had, because, while the tubing was large and every effort was used to make it a success, where the tubing connected to the inhaler the opening was too small. The manufacturer not being a practical anesthetist, or an anesthetist at all, except for the fact that he is an enthusiast regarding gas and oxygen, spent many thousands before this simple defect was overcome. Another essential is the exclusion of air, not only around the rim of the inhaler, but in the exhaling valve; the little disk which rises when the patient exhales and seats when he inhales must seat perfectly. This is a weak point in most of the outfits. If the edge catches and it does not close so as to prevent air entering when the patient inhales, use your ingenuity and fix it so that it does, or you will The exhaling valve, especially in the nasal inhaler, not have success. must be constructed so that it can be closed and locked, so as to make a perfectly tight little cup of the inhaler, so that the gas can be forced through the nose by pressure from the cylinder as occasion requires. If this cannot be done, again it is necessary to change things so that it can be if results are to be obtained.

Preparations Before Extracting.

I wish to mention here a few points in the operation of extracting teeth outside anesthesia. First, have the gas apparatus ready for use, then plan the case and have the instruments arranged in the order

they will be used. If you sterilize by boiling, as everyone should, I feel that it is permissible to cool the instruments in tap water. I mention this because I think many do not boil extracting forceps, because it takes so long to cool them; and I am sure many when extracting under anesthesia go from a pussy root to the not apparently infected, but will admit this is careless, and it would be better to change instruments after removing an infected tooth. A little precaution, which gives me considerable satisfaction, and will please you if you use it, is to paint around each root and flood the cavities of the teeth to be extracted with tincture iodine, as a means of preventing infection when extracting. Some surgeons rely almost entirely upon idoine for sterilizing skin surfaces before making incisions, and I think it is a very good practice to use it as indicated.

Mouth Opening Gags.

A good mouth-opening gag and tongue forceps should always be at hand, as in case of obstructed breathing from any cause. The first thing to do is to open the mouth and draw the tongue forward.

The mouth-opening gag is also of service when a child refuses to take the anesthetic and parents insist that it be given. The child may be put to sleep and the mouth quickly opened afterwards if he refuses to tolerate a mouth prop at the beginning. Then in case a patient drops the mouth prop after he is anesthetized, if one has not a good mouth opener which can be inserted between the teeth it may be necessary to allow the patient to awaken to get the prop placed again, and this is somewhat humiliating to the operator. I also have a prop which, while not a mouth opener, may be inserted when all uppers or all lowers or both on one side have been removed, leaving the operator free to work on the other side. You all know how hard it usually is to place a prop where it rests against gums from which the teeth have just been removed, and I am sure it will be worth your while to look at this prop if you are not already using something like it. The idea is to put an ordinary prop on the right side, extract on the left, then insert this on the left while operating on the right.

Use of Sponges.

Something often neglected by dentists is sponging. A surgeon requires all blood removed as fast as it comes when he operates, and no person can extract well if the roots are hidden by blood. There-

fore, have plenty of sponges. Just a few yards of cheese cloth cut into pieces the size of a sheet of writing paper and get some nurse to show you how to fold it; then either keep in a glass jar and put in a few drops of formalin once in a while, or sterilize in steam. These sponges, or preferably larger ones, or two or three fastened together, may be placed in the back part of the mouth to prevent blood or pieces of root from getting into the throat. They must be large enough, however, so that they will not get into the throat themselves, and used in this way will help anesthesia by preventing air from entering the lungs via the mouth. A small amount of blood swallowed will almost always produce nausea and blood clots quickly form, which if drawn into the air passages may prove dangerous. Therefore, in extracting under gas and oxygen anesthesia it is advisable to keep the patient in an upright position.

We aim to get the patients to assume an ordinary comfortable sitting position and do not allow them to strain the neck by tilting the chin either up or down, as this narrows and constricts the air passages and hinders a free and easy inhalation of the gases.

Method of Administering Gas Oxygen.

In using the nasal inhaler one should have an assistant, who should stand back of the chair, and passing the right hand directly over the head gently, but firmly, hold the inhaler in position while operating the machine with the left hand. This can be



done without getting in the operator's way at all if done correctly. The gas bag or bags should be just comfortably filled and the inhalation started with pure nitrous oxide, only adding oxygen when anesthesia is almost complete or when the dusky color of the lips or the features or cvanotic breathing indicate the need for it. Watch carefully to see that the inhaler fits closely all around the rim and that the exhaling valve seats properly, so that no air gains entrance, and if there is a tendency to breathe through the mouth this is prevented by holding somethingthe hand, a piece of rubber dam or a quarter of a large rubber ball—over the mouth. As consciousness begins to be lost, a small proportion of oxygen should be allowed to enter the inhaler, just enough to prevent cyanosis—just enough to keep the color good—too much causes excitement, laughing, talking or crying and delays anesthesia. The signs of anesthesia here are not the same as when giving straight gas. We should not look for the same symptoms. If we get cyanotic breathing and color, we will, if the anesthesia is to be safely continued, be obliged to use so much oxygen to counteract these symptoms that anesthesia is liable to be lost or become so light as to make it impossible to work. So we work up to anesthesia carefully and look for such signs as the arm falling limply when lifted, and the patient not flinching when the eye is touched. This stage may be reached without forcing the gas, or in some cases it may be necessary to force it a little and also to close the exhaling valve, but when the operator begins, the exhaling valve must always be closed and the gas forced more or less, as the case demands, some cases demanding more than others. Now suppose we have our patient asleep and the operating going on, how to keep him so and safe is the problem, and this is how it is done if it is possible, and it is possible with but rare exceptions. Your closed inhaler is held tightly over the nose, and a constant and steady stream of gas is allowed to pour or be forced to the inhaler. This means the gas bag must be well distended all the time after operating is begun. Then we control the patient's condition by regulating the proportion of oxygen given. It is desirable to have a small, steady flow of oxygen which will not require adjustment, but if this is not possible, by watching the patient carefully and with understanding one may range from giving pure oxygen for a breath or two if the breathing becomes labored, to shutting off all oxygen entirely if the patient is coming out, and still obtain a good result.

This, briefly stated, is the way we use gas and Assistants. We are located in a twelve-story building, occupied exclusively by dentists and medical men, and frequently I am asked to go to other offices to give gas. Sometimes if I am out my young lady assistant

Items of Interest

takes care of these calls. Recently she did this for a man who had not called us before, and next day when I saw him he declared that ours was the greatest gas outfit he had ever seen. He said he had bought and thrown away three outfits, but that this one seemed to work! A few days later, he having tried the gas several times during the interval, I met the doctor at lunch. He said, "Say, it is not that outfit; it's that girl." And so I would emphasize the fact that it is not so much what particular apparatus you use; it is the "know-how" back of it. A skillful operator will make a skillful operation in any branch of dentistry regardless of his facilities, while it is pretty true that "the unskilled workman" blames his tools. The question, "Can I use a modern gas machine without an assistant?" is sometimes asked. I should say in answer that one may, but not with as great success or satisfaction as with one. There are but few assistants who will not take a great interest in anesthesia if properly trained and instructed. This interest may be stimulated by getting them to read Dr. Ford's book on anesthesia, and many very good articles are appearing in the journals, and some of the manufacturers of gas outfits keep supplies of reprints which they will gladly furnish to interested parties. One should use his own judgment in reading these articles, as too many are written with two objects, to instruct and also to sell machines.

In training a new assistant I first tell her all I know about gas and oxygen (this does not take long); then I put her to work with no one around to coach, and I do no coaching myself. If I keep telling her what to do she learns to watch me and not the patient. Then I never dare lose sight of the patient, whereas if she learns to watch the patient I can in difficult cases give all my attention at times to the operation. When the case is over and the patient gone I feel free to comment, criticise or praise, and the more praise bestowed, whether entirely deserved or not, the better it is apt to be for me, I think, for if an operation is not successful, and one finds fault, he antagonizes his assistant and spoils the team work. Since I first began this work it has at constantly recurring times reminded me of playing baseball. Little situations frequently arise where one cannot act alone and has not time to express thought, when the only thing that saves the day is that one thing known as "team work."

Extravagant Claims Made for Gas Oxygen. I think there is some false prophesying going on in regard to gas and oxygen. Somewhat too extravagant claims are being made for it in some respects, and while I think dentists can use gas and oxygen to great advantage in their practices, and

while an enthusiast myself, I cannot refrain from stating that it is my



belief that extravagant claims and overenthusiasm if persisted in is going to cause the extensive use of gas and oxygen to be short lived. Anything for which more is claimed than should be claimed will produce disappointment, and when it is found that some of the claims and assertions made are not true or are exaggerated, there is likely to be a revulsion of feeling that will cause careful men to condemn the method.

Prolonged Administration.

In operative dentistry it may often be used to advantage, but when men advocate working for an hour or more with a patient under an anesthetic, they are, to my notion, advocating a dangerous practice,

regardless of what the anesthetic may be. Hewitt, who is considered a standard authority on gas, considers it is the least dangerous anesthetic agent, and says that in fourteen thousand cases "he has had no anxiety," but if one looks into a report of his cases and reads his book he will find that Hewitt does not mention the use of a nasal inhaler for work within the mouth, and altogether the methods employed by him differ from those mostly used and advocated hereabouts at present. Please do not get the idea that I am trying to discredit the method; the point I wish to make is, that when you think of Hewitt as an authority you must remember that his methods are not the same as the one we are now considering, and consequently a comparison does not mean much.

In the administering of gas I often find that patients express a dread and a fear of taking it. This is very foolish of them, for we have often been told, in fact, I have a very recent paper which was sent to every dentist in the United States, which states that N₂O and O is the only anesthetic which has not produced some deaths. This article refers very glibly to operations of from one to five hours under anesthesia in such a way as to infer that to the elect this is a simple matter, and while it is a good article in regard to analgesia, when its author refers to anesthesia he gets a little wild, as I shall show.

Along the line of long administrations, let us look into a report of Dr. Teter's cases. Dr. Teter has done more than all others combined to put gas and oxygen where it is to-day. The closing of the exhalation valve is his idea, and from this simple thing began the first successful use of the nasal inhaler. He is a genius and a pioneer in the use of nitrous-oxide, and out of his ripe experience he is not making any of these over-drawn assertions that come from some of the men who overnight have proclaimed themselves as authorities on this subject. Here is how Teter's cases run as to length of time: Over three thousand of his cases have been anesthesias of from five to fifteen minutes, and I will venture the assertion that this includes nearly all of his dental cases and some hundreds of his nose and throat cases, and that Teter, who to my mind is the

Trems of Interest

best authority we have, on dental uses especially, would never advocate the administration of gas for more than a few minutes without first making proper preparation of the patient—that is, patient without breakfast and with proper hypodermic as for any other general anesthetic; and second, serious enough cause to justify the use of an anesthetic. Over eight hundred and fifty of his cases are said to have been of from fifteen to thirty minutes duration, while only three hundred and forty-six have run over half an hour. And he reports twenty-two cases of over two hours, two cases over three hours, and all of these administration without a single death.

Deaths During Gas Oxygen Anesthesia. There has recently been a death in an apparently favorable case for a successful operation in a Minneapolis hospital, and nothing but gas and oxygen was used. A case written up in the *Dental Brief*, August, 1912, proved to be a gas-oxygen-ether case, and the

gas did not get the blame. Dr. Freeman Allen, of Boston, in February 10, 1912 (Journal American Medical Association), says: "The safety of gas and oxygen anesthesia in dentistry and in minor surgery requiring brief administrations is not to be contested. It is undoubtedly very safe, but during the prolonged administrations required in major surgery a patient's respiration and circulation undergo many and marked reflex changes, which makes the administration of gas and oxygen in these cases quite a different proposition." Dr. Allen quotes Dr. Bennett, of New York, referring to him as the leading surgical anesthetist of America at the present time: "The writer has administered gas with air or oxygen for operations lasting from a few minutes to more than two hours in several hundred cases, and while he has had no deaths, alarming conditions have several times appeared with such rapidity and so little warning that it scems probable that the general adoption of this form of anesthesia would lead to a mortality nearly approximating if not exceeding that of chloroform and ether. This opinion is strengthened by the occurrence of four such deaths in New York City which have come to the writer's notice within a year. It is therefore probable that nitrous-oxide and oxygen is the safest general anesthetic if restricted to momentary administration of the anesthetic as for dentistry. The prolonged administration of the anesthetic is quite a different matter, however, and at the present time there is not sufficient data to warrant conclusions as to its safey."

Again quoting Dr. Allen: "I have several times encountered in my work the alarming state mentioned by Bennett. They occur suddenly and without warning. The patient suddenly becomes livid; the respiration fails, the pupil dilates, and what I consider the most alarming sign of all, the corneal reflex becomes faint or absent."



Dr. Allen reports a death from nitrous-oxide and oxygen in the following words: "Last year I had a death under nitrous oxide and oxygen. The patient was a profoundly uremic, almost pulseless man, about to be operated upon for decapsulation of the kidney. After four minutes inhalation of the anesthetic and with the oxygen indicator of the Hewitt apparatus pointing to five, the patient died before the incision could be made, clearly an anesthetic death. It may not be pertinent, but may be of interest to know that during ten years of professional anesthetizing I have had but one other death, and that was due to rectal etherization. I know of two deaths and one very alarming accident occurring within two years in Boston in the practice of young doctors administering gas and oxygen in major surgery."

Personally I know of three deaths occuring under under gas oxygen anesthesia, but upon investigation find that in some cases at least some ether had been used with the gas and oxygen. I will, however, cite three cases from my own practice where the "alarming state" referred to above have appeared, and will say that in only one of these cases was any ether used. All these cases were old men, the kind of men who might be expected to have an attack of apoplexy at almost any time; but that makes no difference; a death in a dental office is always a calamity to the owner of the office.

Cases from Practice of the Author.

The first case was a hospital case, and just after the operation commenced the patient apparently died, as the surgeon said, "He is gone," and I think we all thought so. We opened his mouth, pulled out his tongue and started artificial respiration, with no

result. We then turned on the oxygen, and holding the face inhaler in position with the exhaling valve closed, forced oxygen into the lungs as they were expanded by the artificial respiration. By keeping this up we finally got the old fellow around, the first sign being a change in color from a blue to a pink shade. As the operation was then finished, using N_2O and O, but plenty of O, I conclude that the near fatal result was due to not using enough oxygen.

The next case was a dental case, and this was almost a repetition of the other, except that as no ether was used (in the first case a slight quantity was used), I assumed for a time that sufficient oxygen was used, but the more I think of it the more I believe that had enough oxygen been used this case would not have been bad. I thought certainly the man was dead, but by artificial respiration and oxygen we resuscitated him. One might think two such cases would make one so careful he would avoid such results, but not long after I got very interested in a very hard extraction, and although the oxygen ran out, kept on relying on air

at intervals, until finally my patient stopped breathing, and again I had a very bad few minutes. I sent the assistant for oxygen, and alone I started artificial respiration. When the assistant went out, the door locked, and I did not dare leave my patient to open it, so worked alone until he breathed. This gave the assistant time to go down nine floors into the basement and get some oxygen and return and stand pounding on the door for some time, which statement will give you some idea of the seriousness of the case; also what would have happened had I run for a physician and locked myself out. To sum up the reports of these cases I should say that in my own cases I am convinced death would have occurred in each case but for immediate and properly directed steps taken. I feel that gas oxygen is the safest of anesthetics, but that it is the hardest to give correctly, and for that reason is dangerous if used in long cases by inexperienced people.

Pressure Regulator. A recent addition to the machines is a pressure regulator for each gas with a little gauge indicating the approximate pressure of the gases passing to the inhaler. This undoubtedly makes for greater

safety, for I feel that the deaths which have occurred, or at least some of them, have been caused by the fact that, while the oxygen indicator may have been set at a certain point, the oxygen was not coming through. One fault I see in these regulators is that they are too complicated; there are too many things one might forget to do. There is a little outfit made in Minneapolis which regulates the flow effectively, and a glance at the dials, which are very plainly in view, gives accurate knowledge as to whether the gases are coming through, and it is not possible to have gas coming through without oxygen, if the oxygen indicator shows pressure, and the proportion is easily and quite accurately controlled. This sort of arrangement, it seems to me, makes for the greatest safety.

Anesthetics are agents which cause complete loss of consciousness and complete insensibility to pain. Nitrous oxide gas may now be used both as an analgesic agent, producing much the same effect as these analgesic or hypnotic drugs, except that the effect passes as soon as the inhalation is stopped and as an anesthetic. Of late a great deal has been written about mental suggestion connected with analgesia. Here I can see an opportunity for some men to be kept from using it, as some of the articles on this subject would lead one to believe that the dentist who

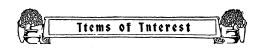


would have success with it must be a sort of hypnotist and sleight-of-hand performer. We must admit that a large part of the success of an operation, using analgesia, will depend upon the state of mind of the patient as affected by what he is told by the dentist, but instead of attempting any flimflam, if the dentist first learns how to do the work, and can by his actions and manner show the patient that he does know what he is doing, and will then have a clear and definite understanding with the patient as to what he expects to do for him, and what the patient is expected to do, he will find that will be about all the mental suggestion necessary for sensible patients who are sincere in a desire to obtain some relief from the pangs of necessary operations on the teeth. If a patient is hysterical, unreasoning and unreasonable, the case is decidedly one not for analgesia, unless you can first conquer and subdue the patient.

Again referring to the dangers we may encounter, I would call your attention to the fact that all of the deaths reported have occurred while medical practitioners were giving the anesthetic. I am unable to find a report of a death in the practice of any dentist, either in general practice or specializing in the administration of nitrous-oxide. When I warn you against working too long with a patient under gas, I mean with the patient unconscious, and this does not refer to doing the ordinary operative work, such as cutting cavities, scaling roots, etc., with the patient only taking enough gas to help him to endure the pain and not enough to make him lose consciousness. There may be a danger here, but if so I am not aware of it. I should consider, however, that extracting teeth with a patient in analgesia with sommoform inhaler in place is risky.

A very important factor in the success of a case of analgesia is the position of the patient in the chair. The position must be such that no strain comes on the neck or muscles of the back or abdomen, and so that the saliva instead of running back into the throat goes forward, where it can be largely removed by the saliva ejector. It is well to allow the patient to spit occasionally, and at the same time instruct him to clear the throat. This I have found by personal experience to be a great comfort. I think it removes the dust which gathers from cutting and burring and moistens up the throat, which naturally becomes dry after holding the mouth open for a long time.

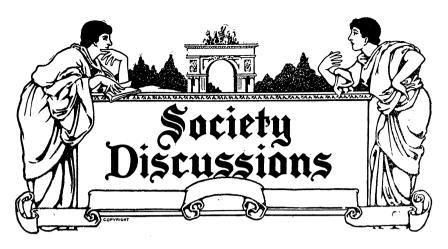
In giving gas for analgesia do not exclude all air, but arrange so that air is always being taken with the gas, and oxygen is rarely needed, unless the patient starts to get blue. The most important points are to impress upon the patient that he is not to go to sleep and then make him do as much assisting as possible by breathing hard through the nose when he feels pain, and avoiding the gas when he finds himself going to sleep. Much remains to be said on this phase of the subject, but this



paper is long as it is, so I will only add that I hope it may suggest a few things not considered by you before and that at the clinic which has been given this morning I hope to have given you a better idea of the manipulation of the apparatus. I hope nothing said may deter any person from using gas and oxygen, for it seems to me no modern office is complete without it. Any one with practice, study and experience may become proficient in its use, but I trust that what I have said may help you to realize the dangers and limitations of its use and to determine the safe, conservative and profitable method of its employment in your work.

In closing I would emphasize this point: In using gas oxygen for operations, other than momentary ones, if you would avoid danger, keep your patient's color pink if at all possible; if not possible to keep a pink color, at least do not allow a patient to become blue, or if so, to remain so. If this is strictly adhered to I think we may safely say one will run very little risk indeed of ever having a case show bad symptoms while giving gas and oxygen.





New Jersey State Dental Society.

Morning Session.

Thursday, July 17, 1913

President Thompson: Gentlemen, I take pleasure in introducing to you Dr. A. E. Smith, Cleveland, who will read a paper on the subject, "Scientific Administration of Nitrous Oxid-Oxygen."

(Dr. Smith's paper and the discussion thereon appeared in January and February ITEMS.)

The hour set by the constitution for the election of officers, having arrived, the election then followed, after which the committee on president's address made a report. This report included several lengthy quotations from the president's address, and a number of separate recommendations were made, all of which were discussed at great length. The stenographer's report will be found in the files of the society. The meeting then adjourned.

Evening Session.

At the Thursday evening session Dr. Francis A. Faught read a paper entitled, "The Importance of Blood Pressure and Pulse Observations During Anesthesia," for which see March Items of Interest. This was followed by a most instructive lecture by Dr. G. B. Winter, of St. Louis, dealing with the subject, "Exodontia," a new word presented by the lecturer for the specialty of tooth extraction. Dr. Winter illustrated his talk with a hundred or more lantern slides.

Morning Session.

Friday, July 19, 1913

As the first order of business the president announced that the question of affiliation with the National Dental Association was open for dis-

cussion. After a full discussion of the general subject the following resolutions were presented by Dr. Harlan and duly adopted.

Resolved, That the New Jersey State Dental Society, in annual convention assembled, expresses its desire and intention to become a constituent society of the National Dental Association—and declares its intention to organize according to the national plan as soon as possible.

Resolved, That all members of the New Jersey State Dental Society, who may desire to join the National Dental Association as individuals (pending the necessary changes in our constitution) shall, as soon as convenient, give their names, and the year's dues of one dollar to our secretary that we may obtain as full a representation in the House of Delegates as possible.

Resolved, That at this meeting we elect one delegate (and an alternate) to the House of Delegates of the National Association, and that the Executive Committee be empowered to elect as many additional delegates and alternates, as we may become entitled to by the voluntary enrolling of our members into the National Association.

Dr. Chas. S. Hardy was then elected delegate to the House of Delegates of the National Dental Association, and Dr. Henry Fowler alternate.

Report of Legislative Committee.

The following recommendations are suggested, and it is hoped will meet with the approval of the society and be passed upon favorably at this session.

That the Legislative Committee be instructed to have bills drawn to be presented at the next session of the New Jersey Legislature, incorporating the following suggestions for reasons that I will explain as I go along.

First, increasing the membership of the State Board of Dental Examiners to eight instead of five, the present number.

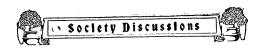
Second, that the time for examination be not limited to three days, but extended to a week if deemed advisable by the Board of Examiners.

Third, that the fine for failure to register yearly be increased to twenty-five (\$25.00) dollars instead of ten (\$10.00) dollars, the present amount.

Fourth, that a yearly registration fee of one (\$1.00) dollar be required from every dentist practicing in the State.

Fifth, that the man hiring illegal practitioners be made liable to prosecution as well as the illegal practitioner himself.

Sixth, that the Legislative Committee look into the matter of the publication of the list of registered men with the State Editor, and if it



is not found possible to have it published by the State Editor, that the secretary be empowered to have it printed for distribution.

This report was fully discussed, and the following resolution thereon was regularly adopted:

Resolved, That these recommendations be adopted by the society and that the Legislative Committee be instructed to work along this line with the co-operation of the State Board of Dental Examiners and see that the bill is properly prepared and presented at the opening of the next session of the Legislature.

It was also resolved that the bill when drawn should be sent to every member of the society.

Report of Committee on Materia Medica.

Your Committee on Materia Medica begs to report as follows:

A number of new medicinal preparations claimed to be applicable in dentistry have been placed on the market.

Some of these have merit, but the great proportion seem to lack novelty and to be well-known medicinal agents presented in new forms, and possibly more convenient or purer combinations, or under new appellations. To some extent alkaloidal medication is supplanting Galenical preparations. Some, again, seem to be older remedies applied to other troubles, or merely revivals of the use of some past method of treatment.

. Humanity seems to have a natural belief and tendency to search diligently for some elixir of life, or panacea, for every disease.

A writer in a Western medical journal has recently written as follows:

"The Chinese idea, and that not uncommonly held in America, is that certain drugs have the power to go to certain organs and by the exercise of some mysterious transcendental force drive out any disease that may affect these organs.

"This is the superstition that the patent medicine men appeal to.

"A proportion of enlightened Americans are still, through an unreasoning habit of mind, pretty much on the same level mentally as the 'heathen' at whom we laugh."

Once in a long while some meritorious agent or mixture may be discovered in medicine which is new and remarkable in its therapeutic effects, but when it is remembered that it took all of the 2,500 years since the days of Hippocrates for empirical therapeutics, or the therapeutics of experience, to discover the really good remedies that are now known, the laws of average or proportion would not call for many new and efficacious empirical medicaments in any one year.

The greatest advances may, therefore, be looked for in the use of biological sera, vaccines or chemico--therapy.

The trend of modern methods of healing is to acquire a knowledge of the pathological conditions present in the case, and then to use medicines whose physiological action is known to suit it. This is known as "Rational Therapeutics," and the use of biological sera, vaccines and chemico-therapeutics is based on it.

In their search for medicinal agents many dentists seem imbued with the idea that there are certain cure-alls or panaceas, which when locally applied as dressings will heal all gingival or root canal troubles. While, undoubtedly, some known agents are palliatives, and give good results, these practitioners seem to fail to grasp the idea that the cause of a very large proportion of the cases they are called to attend is largely a failure or perversion of normal physiological action, or more properly speaking, a local and painful manifestation of some systemic derangement. For instance, it will be found difficult (and occasionally impossible) to properly treat with local applications, the teeth of patients who are anemic, malarial, diabetic, or who suffer from toxin-forming diseases or intestinal fermentations: or, in other words, in any patient having from any cause a low opsonic index and in whom, therefore, the actions of the leucocytes is hampered or paralyzed. It is nature that effects the cure, and nature must be assisted by and demands proper systemic remedies and tonics.

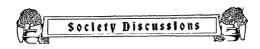
May Dentists Prescribe Internal Remedies?

This may bring us squarely to the question as to whether or not a dentist has, in this State, the right to prescribe medically at all, or at least for such systemic derangements as interefere with proper treatment in oral or dental trouble. The dental laws

do not seem to take cognizance of this matter, and it would almost seem that a dentist did not have the right (and some narrow-minded physicians have quesioned it) were it not that a rational view of the fact that the law requires dentists to prove by examination, prior to licensing, their fitness and knowledge of materia medica, which would presuppose that this test was to ascertain their ability to properly prescribe.

Of course, it would probably be impossible to have an intelligent jury convict any dentist in case of prosecution. To avoid any trouble or controversy, would it not be well to have this society work for a legislative enactment or amendment of the law, declaring that a dental surgeon is a doctor of medicine limiting his practice to treatment of the oral cavity and associate parts and that as such he may prescribe, so far as the proper treatment of his specialty requires and demands?

The right of the dentist to prescribe drugs or use medicines is bound



to arise at some time in some shape, if not actually carried into the courts, and this contingency should be provided against in the State Dental Law. The form used in North Carolina is the best one we know of. It is worded as follows:

north Carolina Law ninety-five of volume two of the Revisal is a surgeon sub-section "A." limiting his practice to diseases of the teeth and such other diseases of the adjacent parts as may be dependent upon or associated with said diseases of the teeth, and who shall have the same right to prescribe drugs or medicines or perform such surgical operations as may be necessary to the proper treatment of the special class of diseases mentioned in this section, as is now enjoyed by registered physicians."

In the field of inhalant general anesthetics and analgesics there seems to be an extension of the use Anesthesia. of the old rather than any particularly new discoveries. It has been recently claimed that if oil of orange peel is used during ether administration a noticeable abatement of distressing features and effects will result. The practice of preceding ether or chloroform anesthesia by ethyl chloride or nitrous oxide seems to be increasing. The use of a combination of oxygen and nitrous oxide for general anesthesia in surgery and dentistry and for analgesic purposes in dental operations is thanks to improved apparatus, widely extending. Scopolamin is being more generally used as a hypnotic or general anesthetic in surgical operations and the use of either scopolamin or hyoscyamin in conjunction with morphin hypodermatically for its hypnotic effects, and also prior to general anesthesia by ether or chloroform for the purpose of obtaining a more tranquil anesthesia, is increasing.

For safety in the field of local anesthesia many now replace cocain by preparations such as eucain, stovain, novocain, olypin, etc. A preparation of urea and quinine has also been used to a limited extent; but the persistence of the local anesthesia, in some cases for two or three days, has a tendency to alarm patients. Refrigerants such as ethyl chloride or ether spray are also more widely used for both analgesic and local anesthetic purposes.

In the field of anesthetics, germicides and antiseptic dressings, there is such a plethora of old, reliable and efficient agents that investigation seldom finds anything introduced as new to be at all superior.

There seems an endless variety of materials for root canal fillings and dressings. A new method of filling with medicated paraffine wax has lately been advocated; but filling with wax is not essentially new. The main points

seem to be that the material used can be introduced as far as the root apex, that it should be so bland that in the event of any being forced through, no serious trouble will ensue, and that it will not waste away, disintegrate, shrink or decay. Several old materials seem to fill these requirements.

Creatment of Inflammations.

In agents for the prevention or reduction of inflammation, it is well to remember that serious inflammation is very unlikely and improbable, and prompt response to local medication may generally

be looked for, in the case of healthy, robust patients with virile and opsonic blood, which speedily exterminates or renders latent any ordinary amount of pathogenic germs. If a patient is debilitated to a greater or lesser degree from the effects of catarrh, influenza, or other diseases, or in cases where congested bowels may have accumulated a quantity of fermenting material forming toxins which paralyze the defensive forces or depletes the blood of its opsonins, very little may be expected from local applications. The natural and proper general remedies must be used to cause the secretion and expulsion of the noxious materials and consequent elimination of the supply of toxins to the blood. Proper tonics will often also be necessary to restore the debilitated patient. In such cases the exhibition of saline cathartics, or, say, a suitable compound of cascarin, alvin, podophyllin with suitable tonics generally produce or hasten happy results. Sometimes the saline agent may be given in the form of Hunyadi or other waters.

We will very briefly mention the following agents which have been given particular mention recently in dental or medical literature and may probably interest dental practitioners. Not all are new, some being merely a revival of old methods of treatment:

Bismuth Paste.

In pyorrhea pockets.

Alypin.

A substance closely related to stovaine, and used as a substitute for cocain, used hypodermically in I per cent. to 4 per cent. solutions.

Stovaine.

A local anesthetic agent.

novocaine.

Much used as a substitute for cocain, and demonstrated at this meeting. Said to have toxicity only of cocain.

Eucaine Beta.

Used as cocain substitute.

Quinine and Urea.

Used hypodermically for local anesthesia.

An arsenical preparation asserted to be a specific remedy for syphilis in all its stages, and in spirillum Salvarsan, "No. 606." affections such as malaria. A newer but similar

Society Discussions

preparation of Ehrlich's numbered about "914" is now claimed to be more efficacious.

Aspirin.

The acetyl derivation of, and acts like, salicylic acid and is used in painful and inflammatory conditions.

An organo-therapeutic remedy to control Adrenalin. hemorrhage. Different manufacturers market it under various names. Also used as a heart stimulant and in local anesthesia to localize the anesthetic.

(Sold as Formin, Urotropine, Aminoform, Cystogen, etc.) A very useful agent which in its elimination acts as an antiseptic not only in the urine, but in the mucous membrane of the upper respiratory passages.

A mixture of bacteria and yeasts used to ferment milk and form lactic acid therein. Used for intestinal troubles by replacing virulent or putrefactive germs by more benign ones.

Bulgare Cablets.

Given directly for the same purpose in doses of one or two tablets before or after meals.

Calendula Cincture.

A wash for wounds.
In root canal fillings.

Wax (Medicated).

Hydronaphthol.

An efficient antiseptic.

Ethyl Chlorid.

A refrigerant to densensitise dentin and as a general anesthetic.

Chloretone.

A dental analgesic or obtundent.

Dentalone.

Chloretone mixed with the oil of cloves, gaultheria and cassia, and used as an obtundent of hypersensitive dentine.

Todine.

A dressing for wounds or before and after operations, a revival of a practice of forty years ago.

Kavlin.

A dressing for swellings or wounds. Sometimes medicated. This is also a revival.

Ethyl Alcohol.

A dressing for wounds is also being revived, also as injection in facial neuralgia and in cancer. Also used as an antiseptic, particularly when tannin is added.

Ethyl Alcohol and Acetone.

A dressing for wounds.

Acetone.

An application after operation.

Magnesium Sulphate. Used in concentrated or saturated solution as an application in painful inflammatory conditions.

Ttems of Interest

Scopolamin or Hyoscyamus.

Used in conjunction with morphine prior to ether or chloroform to produce a more tranquil anesthesia; and in some cases these are the only agents used. Also given by the mouth as an analgesic.

Calcium Chlorate.

Has been used to hasten the coagulation of blood. Also to lessen or prevent the formation of exudates in inflammatory conditions.

Ether.

Has been reported to have been successfully used intravenously (using, say, 250 c.c. of a 5 per cent. solution in normal saline) for anesthesia in

weak individuals. As only a small amount is used it is quickly eliminated by the lungs. The patient is anesthetized in ten minutes. The usual by-effects of anesthesia are avoided.

Fydrochloric Acid. per cent. H. Cl. one-quarter of an hour after every meal, or, say, four times per day, has given good results in pernicious anemia. Taken in slightly smaller and weaker doses for some time it gradually abated uric acid in the blood and was

curative of gout and similar diseases.

It is well to know that this drug is a very quick heart stimulant and cases are reported where 1/200 of a grain strengthened the pulse five or ten minutes

after the dose was given.

Used in strong solution in roots of badly broken down deciduous teeth, having crowns partially ground off, in order to preserve them and thus re-

tain space for permanent teeth.

Vaccine Creatment and Chytacogens.

For pyorrhea, rheumatism and other diseases from mixed infections.

Dental Analgesia.

Has been well discussed at this meeting and it is not necessary, therefore, to add more.

Potassium Oleate.

For the relief of abscessed conditions, especially soreness after extractions.

Zn. Chlorate Mouth Washes. In the proportion of Zn. Chlor. I per cent. with alcohol and essential oils.

Coaqulose.

A preparation to hasten regulation in case of hemorrhage.

(Signed) Thomas J. McLernon, Chairman Materia Medica Committee.



Clinics Before the New Jersey State Dental Society.

Oral Surgery. Dr. H. S. Dunning, New York, N. Y.

Young woman, age 20, suffering from pain and discomfort on left side of face and upper jaw, region of second bicuspid and first molar. The above teeth were found to be devitilized and at their apices was found an area of necrosis about the size of a ten-cent piece. The necrotic area was directly over ends of teeth and extended to floor of antrum, and was disclosed by a radiograph.

Teatment indicated was the amputation of the two apices involved, and thorough curetage of necrotic area leading to antrum. Patient was given nitrous oxid and oxygen by Dr. Perkins. Incision made about one inch long extending from first bicuspid to second molar; soft tissues including periosteum, carefully laid back and bone exposed. Small pus cavity found surrounded by soft diseased bone. Cavity curetted and packed with gauze incorporated with bismuth paste. Owing to difficulty in operating at clinic, the operator thought it best not to amputate roots this time. At subsequent operation, the first molar was extracted and second bicuspid root amputated. Antrum opened through first molar alveolus, and thoroughly drained, found to contain large amount of foul smelling pus. Wound packed and antrum irrigated daily with warm saline solution. Condition improving, but subsequent opening and drainage through nose will probably be performed to hasten faster repair to tissues.

Non-erupted bicuspid tooth in an edentulous mouth of patient, aged 54. The patient had been wearing for some years full upper plate. For the

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last few months patient had felt slight pain in palate region, and complained that plate did not fit as well as it had done previously.

Examination of mouth showed that there was a small sinus situated about middle of palate. Upon probing, a hard, smooth surface was felt which indicated presence of tooth.

Under I per cent. novocain injection soft tissues were freely laid open and the crown of tooth could barely be seen situated deep in the hard palate. By means of a very thin root forcep tooth was extracted. Cavity irrigated but not packed.

Chloro-Carboline as an Obtundent and also in Pulp Extirpation. Dr. S. A. Wallace, Lakewood, R. I.

This new obtundent was demonstrated by Dr. S. G. Wallace, of Lakewood, N. J. For the operation in cavity preparation, a large cavity in a lower third molar, extending through the occlusal and buccal surfaces to the gingival margin, was selected. After removing the débris, the operator almost filled the cavity with a pledget of cotton, saturated with the obtundent. This was allowed to remain about five minutes under slight pressure. The cotton was then removed and cutting continued without any discomfort to the patient until the cavity preparation was complete. The operator stated that frequently it became necessary to drive warm air through the saturated cotton and in some cases it would be advisable to allow the cotton to remain in the cavity for a longer time, depending upon the sensitiveness of the tooth structure.

In the present demonstration, however, the obtundent acted promptly and the cavity was desenitized in a very short time.

In cutting and grinding sensitive tooth structure for bridge abutments and crowns the best results were obtained by dipping the stone or bur in the obtundent and keeping the instrument and tooth structure thoroughly saturated with the liquid while the operation was being performed.

Although no actual demonstration was given, the operator stated that he had painlessly extirpated pulps under pressure with the obtundent in less time and less discomfort to the patient than by any other method or medicaments. This method, as he explained it, was to carefully remove all débris, saturate cotton in the obtundent, place in the cavity under slight pressure for a few minutes. If hypersensitive, use warm air on the cotton. Enlarge the cavity sufficient for exposure of the pulp and to admit a pledget of cotton thoroughly saturated with the obtundent and a ball of unvulcanized rubber sufficient to seal the cavity. After the adjustment of each a steady, gradual increase pressure should be placed



on the ball by a broad-faced instrument, forcing the obtundent into the pulp until it fails to respond in pain to pressure.

It will be found that the pulp will rapidly absorb the obtundent and desensitization will be complete after a few minutes' pressure.

The method of application is the same where the pulp is not exposed or in a sound tooth to be used for bridge abutments. The tooth should be wrapped with a strip of gauze to retain the obtundent only in this case the application of the obtundent must be repeated from time to time as sensitive dentine is reached, until the pulp is finally exposed.

The operator strongly advocated using a pipette with which to carry the liquid from the bottle to a receptacle in which the pledgets of cotton and instruments could be dipped.

It is also worthy of note that the obtundent is an antiseptic and will not injure the most delicate tissue.

New Inhaler, Mouth Prop and Respirator. Dr. H. E. Compkins, New York City.

Displayed a new inhaler for surgery of the nose and face. It consisted of a flat-curved tube so shaped that when anesthesia was established it could be passed to the back of the mouth into the pharynx, thus holding the tongue forward and keeping the throat clear.

He showed, also, the application of the new De Pass mouth prop, which consists essentially of a moulded bar of soft rubber to be folded upon itself and inserted between the teeth, holding the mouth open and leaving a clear field on the site of operation.

He demonstrated his new "Respirator," an apparatus for resuscitation by artificial respiration. It consists of a foot bellows, tubing, a controlling safety valve and the face mask or throat tube. This demonstration was given by the use of toy balloons, which were filled and emptied as are the lungs. Its operation follows:

A Champetier de Ribes colpeurynter is passed into the esophagus and blown up, tongue is drawn forward as far as possible, mask is strapped on the face, holding the tongue between the mask and chin; by pumping the bellows, air is forced into the lungs until they are full when any excess air is blown into the atmosphere; by pressing down upon the controlling valve the air is expelled from the lungs by their own elasticity. This operation of alternate opening and closing of the controlling valve allows of forced respiration until such time as respiration is taken up automatically by the patient. The operation of the apparatus is not in the least tiring, nor does it depend upon high pressure oxygen, nor can it in any way prove dangerous by rupturing the delicate air

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vesicles of the lungs, for the amount and pressure of air entering the lungs are controlled entirely by the lungs themselves.

It was the intention of the clinician to show the "Anesthetic-meter," an invention of Dr. Carl Connell. This apparatus measures the volume of air or gas passing to the patient, thus insuring a perfect and definite mixture of gas and oxygen and, if it is desired, a definite percentage of ether. Its one great feature is that after anesthesia is established, ether will be fed to the patient in a determined amount and no attention need be paid to the patient, for the machine is almost entirely automatic. (It was impossible to show this apparatus for the reason that an accident had happened to the means of transportation the day before.)

(A) A Method of Obtaining a Perfect Fitting Gold Crown from the Dental Laboratory. Dr. D. W. McLean. Mount Vernon. D. Y.

First the tooth is "prepared." This can seldom be done without devitalizing the pulp. The most simple and expeditious method of removing the pulp—nitrous oxide and oxygen are administered, and the patient placed in the analgesic state. The pulp is then exposed with a sharp bur. Only the slightest suggestion of pain will be felt. The tooth is then isolated by means of a "J. & J." aseptic doily, and a half tablet of cocain and adrenalin applied to the pulp. A piece of cotton slightly moistened with sterile water is then placed over the cocain tablet, and a firm, strong pressure applied. In the analgesic state the patient will feel no pain, and one strong pressure will usually be enough. The pulp is then removed, and the canals reamed. This will consume about ten minutes.

The tooth is now shaped with diamond discs and stones, so that there is a definite taper toward the occlusal. Enough should be removed from the occlusal surface to accommodate a crown reinforced not only in the cusps, but also in the fissures, where the stress of the proper occlusion will largely fall.

A dentimeter measurement is now taken, and a narrow platinum band made and soldered. This is trimmed to conform to the contour of the gingival gum margin, and is carefully fitted and burnished to the tooth. The band is then placed in position on the tooth and a careful bite and plaster impression are taken. The cast is poured, giving us the band in position on the plaster tooth.

The casts are then articulated and sent to the mechanic, who is instructed to make the crown so that it will extend half-way up the platinum band and occlude properly in that position. The crown is then



contoured to the band, a piece of solder laid on the joint, and melted with the blow-pipe. This soldering is done on the cast.

The finished crown will slip into place on the tooth without any further grinding or fitting.

(B) A Cast Crown with Steele Facing, to Replace the "Richmond" in Fixed Bridgework.

The root canal is reamed, and the root prepared somewhat as for a Logan or other porcelain crown. The enamel is removed with a suitable scaler, from the mesial, distal and lingual surfaces of the root and the edges beveled. With an Ottolengui reamer the root is faced at a slight incline toward the lingual, but not to a point below the gum margin. From the root canal forward to the facial edge it should be given a more decided slant, to a point *near*, but not at or beyond the edge of the peridental membrane.

A Steele facing, either anterior or posterior, as the case may require, is then ground to a good joint at the cervical margin, facially, and a gold backing applied and fitted to the facing. A piece of inlay wax, heated, is then applied to the back of the facing and tapered with the fingers to a point, which is pressed into the root canal, and the facing is pressed into position. It is then removed, and the excess wax removed; it is then placed in the root again, and the edges of the wax burnished to the tooth, mesially, distally, and lingually.

If not now in its proper position, remove once more, slightly soften in warm water, and again press into place in the tooth, adjusting carefully to its proper place.

Remove from the tooth, remove the facing, and cast in the usual way. Gives a very strong crown, post, base and backing cast in one piece, and the post fitting the root perfectly. Coin gold, clasp, or twenty-two carat gold preferred for this work.

Orthodontia. Dr. U. B. Jackson, New York, N. Y.

In his demonstration, Dr. Jackson presented forty models and appliances, illustrating his method of designing and making his removable regulating appliances, which are readily removed by the patient for cleansing of the teeth and the apparatus, and showing how the apparatus is easily anchored and arranged for the correction of any form of irregularity of the teeth. He described first his method of anchoring appliances to the teeth by spring clasp attachments; second, his new method of anchoring appliances to the teeth by his locking device.

Ttems of Interest

With the locking device the appliance is anchored to a distal molar, and a cuspid or bicuspid on each side of the arch.

The locking device or anchorage portions of the appliance consists first in cementing a collar with a buccal lug to each of the anchorage teeth. The locking device is arranged in effect like the action of a door latch, the lug on the collar being of triangular shape, forming a catch. To the mesio and disto-lingual portions of the appliance are attached a wire clasp, shaped to pass from the appliance over the arch at the junction of two of the teeth, and the free end shaped to rest above the buccal lug of the collar cemented on each of the anchorage teeth described. The free end of the clasp is arranged to terminate in a loop, similar to a small wire hook, so that in raising the spring with one's finger in unlocking the device, the finger will not be pricked nor injured in springing outward the end of the wire clasp; also having the clasp terminate in a hook provides the necessary hooks for supporting one end of a rubber equalizing band, used for equalizing.

This anchorage is suitable for supporting the appliance for the treatment of any form of irregularity of the teeth, being especially suited for the equalizing of the upper and lower dental arches in correcting prognathus condition of the mandible; or for protrusion of the upper arch; rotation of any of the teeth; retention of the teeth; their movement in the process, by the use of "rubber equalizing bands" and by the use of "equalizing posts," etc.

The apparatus is adapted for treatment of patients of any age as in moving the teeth for a child, or an adult.

With the collection were shown models of the upper and lower dental arches of children four years old, before and after regulating. One case was of upper protrusion and narrow arches. Accompanying the models were a record card, noting the history of the case, the number of applications of force applied, noting the measurement of each application of force with their dates. The regulation was accomplished by expanding the upper and lower arches and by the equalizing of the dental arches by the use of rubber equalizing bands passed over the hooks described.

He demonstrated the advantage of the tracing and record system that he introduced, to insure the operator in making a definite measurement of each change made in the apparatus, in applying a given amount of force and a definite amount of movement, thus preventing any discomfort to the patient. Each change in the apparatus is controlled by measurement, or a step recorded on the record card. Dr. Jackson pointed out that by using the record card in the manner described, he "reduced orthodontia to an exact science."



Improvements in Vulcanite Work. Mr. A. S. Rutherford, New York, N. Y.

The clinician demonstrated five points by which better fitting plates can be obtained with a minimum of discomfort to the wearer.

A number of plates which had been worn for years were exhibited, to prove that while these methods are not new they are not generally used.

- I. If a large spoon excavator is held at an angle of 45 degrees, the handle toward the front of the plaster model, a groove may be made along the edge of the model and given a gradual backward slope, the deepest part being at the back. If the plate is filled up so that the resulting ridge runs along the very back of the plate the air will be entirely excluded when the plate is in use.
- II. In a soft mouth better and more lasting results can be obtained by the use of a ridge instead of an air chamber, to make which, the spoon excavator should be held upright and the groove in the plaster model should be about one-third the depth of the excavator, the size of the excavator being about that of a No. 5 bur. Should there be a hard palate the plate should extend beyond it and be lifted the depth of these ridges by the use of air chamber metal. The ridges should always be over the soft parts.
- III. If the plate is cut away well, to allow free play of the muscles, it can be worn quite high and thus insure a good fit.
- IV. If a blunt wax spatula is rubbed vigorously over the plate all the small defects from the plaster cast will be removed, and it is surprising how many of such defects there are. Defects caused by the knife cutting into the model should be drilled out.
- V. A small amount of vaseline, grease or oil of any kind, rubbed over the plate after it is finished will permanently remove the dull appearance from the rubber and enable the wearer to keep the plate clean with little trouble. A small piece of cotton twisted on the end of a match or toothpick, dipped in vaseline and forced between the teeth will greatly improve the appearance of the plate.

Silveroid, Mr. Wm. W, Atkinson, Phila., Pa.

There was demonstrated a fusible alloy, silveroid, which had been devised by the clinician to meet the needs for a strong, clean metal for lower bases, which is not open to the objection of excessive weight of fusible alloys due to casting the whole plate of metal so that it might be

strong enough to withstand wear. Such cases are tiring and uncomfortable and, through pressure, are likely to cause alveolar resorption involving the risk of fracturing the mandible itself. It was stated that with silveroid, a plate the thickness of ordinary wax base plate, cast with a narrow strengthening ridge back of the median line, will sustain a rubber attachment and afford opportunities for artistic and natural effects.

There was also demonstrated methods of inlay making with this alloy, attention being called to the remarkably sharp edges and fine polish, and it was shown that the metal is applicable to the soldering of orthodontia appliances, an ordinary soldering iron being used for that purpose.

The casting machine of Dr. Robert T. Seymour was used for the reason that plates cast under pressure, as in that apparatus, are more dense owing to the condensation of the melted alloy. Worked in this manner, the force of crystalline adhesion is in its best expression and, therefore, greater strength and a finer surface are obtained. Progressive stages of inlay work were shown, together with finished vulcanite attachment, lower sets in both natural and conventional types of construction. Much interest was manifested in the novel and rapid method of finishing the plates by the use of stick tripoli and stick rouge on rag wheels, and the final cleansing and development of a lustrous polish with a clean rag wheel and water.

Thin Plates of Uulcanite. Dr. W. G. Lewis, Brooklyn, N. Y.

A properly vulcanized rubber plate gains nothing in necessary strength by being made thick and cumbersome: in point of fact a thin, springy plate of uniform thickness will stand use and abuse better than a thick and more rigid one.

After a plate is vulcanized it should be treated to the minimum amount of scraping and thinning in finishing, as (especially in a thick plate) the outer layers of the vulcanite have much greater strength than the inner portion, and much scraping and thinning removes the outer horn-like layer and leaves only the inner, imperfectly vulcanized, and consequently weaker portion.

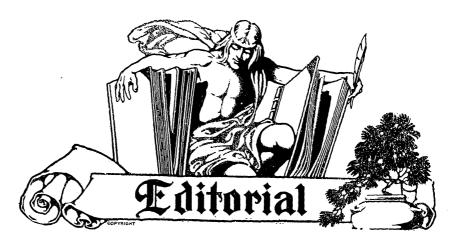
The use of a swaged metal trial plate overcomes all the difficulty found in producing a vulcanite plate of known and uniform thickness. It furthermore gives an unyielding and rigid trial plate which will not change shape in the mouth. Soft metal of the type of air chamber



metal can be obtained in different thicknesses and this, by the use of a rubber swaging press can be swaged up directly on the plaster model without injuring the model in any way, and an ideal trial plate thus produced, the thickness of which is known and uniform, and which will reproduce on the lingual surface of the finished plate all the irregularities and markings found in the roof of the mouth, thus adding to the comfort of the patient and appreciably aiding phonation.

The after-treatment consists in vulcanizing under tin foil, when the finishing is easily accomplished by means of a stiff brush wheel and pumice, followed by polishing.





"The Perfectly Good Amalgam Filling".

In the last issue we published an article by Dr. Kells, further elucidating his views on the "Passing of the Gold Foil Filling," and as he announces that he therewith closes the discussion, it would be discourteous to reopen it, but at the end of his communication he says: "And Dr. Ottolengui takes out perfectly good amalgam fillings, to be replaced by inlays." Thus a new topic for discussion is provided.

Why should any man remove a perfectly good amalgam filling? What is a perfectly good amalgam filling? The first difficulty that is met in considering this subject at all is the unfortunate fact that the term "amalgam filling" has no definite meaning. When we speak of a "gold foil filling," at least we know that the metal is of a definite quality, so that the difference between gold foil fillings made by different men is almost wholly dependent upon the skill of the operator. Of amalgams, like Heinze's pickles, there are "fifty-seven varieties," and of these varieties, if we accept the views of Dr. Black, Dr. Crandall, and others who have investigated this great problem, there are perhaps not more than seven from which a perfectly good amalgam filling can be made, even by the most skilled operators. And even with these most perfect alloys we are informed that methods of manufacture, age, and other factors, including technique of amalgamation and insertion, render the absolutely perfect result more or less chimerical. How frequently, then, will Dr. Ottolengui or any other operator find opportunity to remove "perfectly good amalgam fillings?"



What is a Perfect Amalgam Filling?

By what standard shall we judge the perfect goodness of an amalgam filling? We firmly believe that one of the most important requisites of a perfect amalgam filling, together with the technique of attaining it, had not been described prior to the

article by Dr. Pond in the February ITEMS OF INTEREST, whose position is further fortified by Dr. Frahm in the present issue.

The carving of amalgam into a good semblance of the masticating surfaces of molars and bicuspids, the carving being done prior to the setting of the material, was not possible before the advent of the quick-setting amalgams. And just as the feasibility of reproducing these surfaces with the gold inlay is only just dawning upon the minds of the best operators, so, too, it would seem that few, if any, have heretofore taken advantage of the rapid setting of amalgam in order to carve up cusps and sulci while the material is yet plastic.

The writer recalls that some twenty years ago he became possessed of two lower sixth-year molars, each having three perfectly defined roots. From their roots one might at first glance suppose them to have come from the upper jaw. The crowns were badly destroyed by caries, and in order to restore their forms, amalgam was used. The difficulty of correctly carving these fillings, so that the characteristic shapes of lower molars would lead one to recognize that, despite their three roots, the teeth came from the lower jaw, was discovered at this time. This difficulty of carving amalgam which has already hardened is even greater in the mouth, and the time required, if nothing else, would prohibit such work with a material commonly used to lessen the expense to the patient. The new technique of utilizing a quick setting amalgam, and carving the filling during the plastic stage, opens up important possibilities, and it is devoutly to be hoped that better work will be done with amalgam, because of the pronouncement of this propaganda.

The writer recently was demonstrating to a post-graduate study class the importance of restoring occlusal form, and was exhibiting some specimens of large amalgam fillings of which he made the following comment:

"Apparently these fillings were carved (?) with a ball of wet cotton!" One of the men present replied: "That is exactly what we were taught to do in college."

Ttems of Interest

So long as the writer remains in his present mind as to the importance of restoring the masticatory function of molars and bicuspids, by copying the normal shapes of the occlusal surfaces, just so long will he feel entirely authorized to remove amalgam fillings "carved" with a ball of wet cotton, however perfect otherwise they may be. But be it added, that up to date he has not as yet removed any amalgam filling which did not show defects other than that of being wrongly shaped, so rare is the "perfectly good amalgam filling."





I MUST CONFESS that I have no absolutely fresh table talk at present.

- Truth is that the blizzards have made most of the suburban trains late,
- and even the uptown trolleys have been slow, so that most of the men
- * have rushed off home after meetings, without waiting to grill the
- * essayists, and professional discussionists, in the grill rooms. There is
- still six feet of snow piled in front of my home, so that a taxi cannot
- land me near my house, even if I could induce one to attempt the trip.

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THIS, THEN, IS a good opportunity to record some comments that have

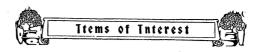
- been received in regard to previous talks. About the middle of January
- * I received a communication from a bashful gentleman, who asks me to
- sign his name simply "E. J. K.," but who evidently also knows his P's
- and Q's. Of his own letter he says, "There may not be any merit in
 what I have written, but I voice the sentiments of a great many in the
- profession." There is merit in what he has written, and it is therefore
- profession. There is there in what he has written, and it is therefore
 set down here in black type so that it may convey a hint to them that
- . need it most.

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- E. J. K. WRITES as follows: "I heartily approve of the new departure * announced in the January issue under the title 'Around the Table.' I
 - am one of the little fellows who possibly would like to say something
 - am one of the little fellows who possibly would like to say something
 at State Society meetings, but refrain from doing so for reasons best
 - * known to men similarly minded. My criticism is that the little fellow
 - never gets a chance in State Society meetings, the control of which is
 - in the hands of a few of the 'Old Guard,' who are always occupying the
 center of the stage in the glare of the spot light, and who believe that
 - their own refulgence is so dazzling as to dim the calcium rays in which
 - they bask.

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- "IF AN UNKNOWN advance a suggestion, or a new idea, or attempt to criticise a paper of one of the 'big boys,' the 'Old Guard' arise en masse
 - and so surround the 'little presumer' with icy atmosphere, that his brain



cells become frozen and his ideas fall like icicles from his lips, and he

is so chilled that he does not thaw out until a month or two later.

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"THIS CONDITION of affairs seems not to be localized, because I speak from experience in three State societies, in one of which I must admit, however, that the leaders are sufficiently broad-minded to realize that the 'little fellow' may be worthy of cultivation. One society which I have in mind, which I think is the second largest in the United States, is controlled by six men who are practically a mutual booster association. I am personally acquainted with a number of brainy 'little men,' members of this society, who never had a chance to be heard in many years, but who have eventually expounded good ideas and have contributed to dental progress by presenting their thoughts elsewhere. In this society it would seem that all the glory is for the few who pose and strut about like pouter pigeons, while the rest of the members must be content to be the gallery, taking their cue and applauding at the appropriate moments. May your new department be an open forum for all of us."

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WELL, THERE YOU ARE. That is what E. J. K. thinks about it, and I

have no doubt that A. B. C., and X. Y. Z., "Constant Reader," "Onlooker" and others, all agree with him. And there is no doubt some
considerable truth in the arraignment. But the Old Guard is not wholly
blamable; the "little fellow" is a bit in the wrong also. However, I do
not want to hurt anyone's feelings, big or little, so I will just make a
suggestion, and pass to another subject. It is a whole lot easier to
criticise than it is to do better. This is well known to the executives of
all societies. Nevertheless, it would be well to recognize that the little
fellow has some rights, and some possibilities.

THERE IS LITTLE doubt that the great prominence of Illinois dentists is

largely due to a sort of unwritten rule (not perhaps openly admitted,
but nevertheless true), to seek for essayists outside of Illinois, as infrequently as possible. Thus they have encouraged their own men to do
things, and they have become important factors in dental progress in
this way. Other States might follow this example with profit both to
the societies and to the members. In athletics it is a common practice
to hold a set of games, or to have at least one race, for "those that have
never competed before." Why would it not be a profitable proposition
for Executive Committees to become acquainted with the work of their
own men, and to set aside one session of a meeting for untried home

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talent? Some of our best athletes have been "discovered" in this man-

DR. F. W. RICE, of Sayre, Penn., wishes to inform his fellows Around the
Table that when flasking a repair of a denture, time can be saved by
placing a piece of tissue paper (cigarette paper), over the first plaster
placed in the flask and pressing the same down smoothly over the soft
plaster, and then filling the flask as usual without waiting for the first



- to harden. What Dr. Rice says is true, and separation will be further
- facilitated by dusting talcum powder freely over the paper before pour-
- ing the second half of the flask.

THE DISCUSSION on root canal filling, in the February table talk, has brought in a number of letters containing valuable comments which will

- ٠ be reported later, but one letter contains a curious statement which in-
- ÷ vites immediate comment. The writer alluding to Dr. Pond's paper
- ٠ advocating the restoration of occlusal surfaces with amalgam, says that
- * Dr. Pond's paper is worth more than all the papers on root canal filling
- * and gold inlays that have appeared in the journals of late. Dr. Pond's
- ٠ paper was certainly important because it was a suggestion of better
- ٠ methods. Similarly, all descriptions of gold inlay methods are impor-
- * tant, if they record better ways of obtaining better results. But it must
- be remembered that neither the best amalgam filling nor the best gold
- inlay can permanently save a tooth the root canals of which are im-
- ٠ properly filled. Nor is there any department of practice in which the
- ÷ dental profession as a whole is so lamentably incompetent as in root
- canal treatment and filling.

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STUDY CLASSES are being formed in increasing numbers in all large ٠ cities. So great do I believe the demand for advanced methods of root ٠ canal treatment, that I can imagine no better work for the dental so-

- * cieties of this country to engage in during the next winter than the
- ٠ formation of classes, under the tutelage of experts in the field, for the
- study of the technique of root canal filling. Anyone who tests the ques-
- tion fairly, in his own work, will soon discover, if the X-ray be em-
- ployed, that his success in treating root canals is far less than he had
- ٠ fondly believed. The filling of even single rooted canals is often so
- * much more difficult than it has been supposed to be, that it is almost
- ÷ obligatory to have two or more radiographs of every case undertaken
- in order to accomplish successful results.

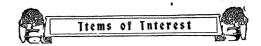
THE EXPENSE of radiography may at present seem to render this course

- prohibitory, and the cost of installing X-ray apparatus has deterred •
- many from adopting this method of aiding and checking up their tech-
- nique. But all who, after hesitation, have finally taken up radiography
- have discovered that the first cost of the apparatus has quickly been
- returned in fees. Patients cheerfully pay charges for competent root ٠. *
- canal fillings, when it is explained that a well filled root, with cavity
- filled with amalgam, is worth more than a poorly filled root with a gold
- crown, or expensive porcelain inlay surmounting it.

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JUST SO SOON as a great majority of dentists decide that patients must be taught that it is worth more to have the root filled, than to have the tooth filled, and that their health demands good root work more than

- · good fillings, just so soon will the cost of radiography be so reduced as
- to be within the reach of all. With more men referring patients for
- radiographs of roots, there will arrive a greater number of specialists in radiography, and a reduction in the charges therefor. With a greater



- * number of men installing X-ray outfits there will be produced an effica-
- . cious apparatus at low cost.

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WHY WOULD IT NOT be a grand idea for the executive officers of some

- . of our State societies, who are at present engaged in preparing society
- * programs, to undertake the formation of classes in root canal filling, at
- their coming meetings? Undoubtedly, experts could be obtained who
- would clinically demonstrate the successful opening, cleansing and filling
- of root canals, using the X-ray as an aid in the work. Such demonstra-
- tions if taken up seriously throughout the country would revolutionize
- the present attitude toward this branch of dental practice.





The Naval Dental Corps.

TO THE EDITOR:

Dear Sir—For the general information of the dental profession and those who may desire to enter the Dental Corps of the United States Navy, I desire to state that the Act of August 22, 1912 (Naval Appropriation Bill, making appropriations for the Navy for the ensuing year) contained a provision authorizing a Dental Corps for the Navy.

In addition to the dental corps, to consist of thirty acting assistant or assistant dental surgeons, the age of whom on appointment must be between twenty-four and thirty-two years of age, provision was made for a limited number as acting assistant dental surgeons for temporary service.

After having passed the required examinations, appointees serve a probationary period as Acting Assistant Dental Surgeons for three years, at the end of which time they are examined to determine their fitness for appointment as assistant dental surgeon.

Upon successfully passing the examination for appointment as assistant dental surgeon, the candidate receives a commission, being nominated by the President and confirmed in the Senate in the same manner as other commissioned officers of the Navy.

Officers of the Dental Corps have the rank of lieutenant (junior grade) and are entitled to all the military courtesies and consideration that go with that rank and are accorded officers of other branches of the service in a similar grade.

They wear the same uniform as other officers of the Navy, with a designating device distinctive of their corps.

Pay of Maval Dental Corps. Officers of the Dental Corps receive the pay and allowances of lieutenant (junior grade), namely, \$2,000, or \$166.66 per month. At the end of each five years' active service an increase of 10 per cent.

is given, until at the end of twenty years the maximum increase of 40 per cent. is received, making \$2,800 annually, or \$233.33 per month, with a further increase of 10 per cent. when serving at sea or on a foreign station. When on shore duty they are furnished with quarters either in kind, three rooms, or commutation at the rate of \$36 per month. An allowance for fuel and light is also provided.

When traveling under orders, mileage is allowed at the rate of eight

cents per mile. Leave of absence on full pay may be granted by the proper authority at the rate of one month per year. Absence from duty on account of sickness involves no loss of pay.

The tenure of office in the Dental Corps of the Navy, except in case of acting assistant dental surgeons appointed for temporary duty only, is for life, unless sooner terminated by removal, resignation, disability, or other casualty.

Retirement. Porary appointees) are retired from active service at the age of sixty-four years, and when so retired (or when retired from active service for disability or other casualty contracted in the line of duty before that age) receive an annual pay for life amounting to three-fourths of the highest pay of their grade at the time of retirement.

When any officer of the Navy, including dental officers, has been thirty years in the service, he may, upon his own application, in the discretion of the President, be retired from active service and placed on the retired list with an annual pay for life amounting to three-fourths of the highest pay of his grade at the time of retirement.

Immediately upon official notification of the death of any officer, including dental officers, from wounds or disease not the result of his own misconduct, there will be paid to the widow, children or dependent relative of such officer, previously designated by him, an amount equal to six months' pay at the rate received by such officer at the date of his death, less \$75 to pay the expense of interment; but the residue, if any, of the amount so reserved will be paid subsequently to the widow or other designated beneficiary.

It is believed that the status, pay and allowances and other incidentals of the corps should make the service desirable and attractive to such dental practitioners as may think they would enjoy a naval life. Assignment to duty may be made to navy yard, naval training stations, hospital ships and aboard vessels of the fleet.

The physical examination for candidates to the Dental Corps is thorough, and he is required to certify, on oath, that he is free from all mental, physical and constitutional defects.

A knowledge of the common school branches is required. Credit will be given for knowledge of languages and the sciences, which, howere, is not essential.

For further information address the Surgeon General, U. S. N., Navy Department, Washington, D. C.

EMORY A. BRYANT, A. A. Dental Surgeon, U. S. N.



Dr. John Nathan Crouse.

Died, Chicago, Ill., January 16, 1914, of heart failure, age 71.

Dr. Crouse was born September 15, 1842, near Downington, Pa. He received a common school education in Illinois and Pennsylvania and later at Mount Carroll Seminary, Mount Carroll, Ill. Began practice in 1864 at Mount Carroll. In March, 1867, graduated with degree of D.D.S. from Pennsylvania College of Dental Surgery. In 1868 he opened an office in Chicago and practiced continuously from that time until his last illness.

Dr. Crouse was one of the most marvelous executive men that the dental profession has ever seen. He was possessed of an indomitable perseverance and will power, and rarely set himself a task which he did not pursue until its completion.

Early in his career, 1864, he aided in the organization of the Chicago Dental Society, of which he was the last living charter member. He was a president of the National Dental Association and for a long time was associated with its Executive Committee, during which years the society enjoyed some of the finest meetings in its history.

Perhaps he was best known to the dental profession through his having founded the Dental Protective Association, an organization which was brought together for the avowed purpose of defending dentists from imposition under process patent rights. The writer well remembers the great meting at Masonic Temple, New York, at which Dr. Crouse first propounded the purposes of this association to the dentists of this section. Dr. Crouse by his oratorical powers, forceful arguments and marvelous magnetism, practically hypnotized the tremendous audience present so that a very large percentage of them became voluntary solicitors for memberships in the Dental Protective Association. This one characteristic of Dr. Crouse stands out more conspicuously in the writer's memory of him than all else that might be said of him and all things that he may have done.

He was a man who made tremendous friendships and equally strenuous enmities, but in every debate, regardless of however venomous an attack might be, Dr. Crouse retained his calm dignity and at the proper moment would come forward with arguments and almost hypnotic

appeal, which invariably induced those present to vote with him. The writer well remembers and is glad to record his first association with Dr. Crouse. He was one of those who became fully convinced of the unselfish purposes of the man, and though in later years he disagreed with Dr. Crouse in regard to methods, he never doubted that the man followed his own bent because he was convinced that his way was the best way.

The dental profession owes Dr. Crouse a tremendous debt of gratitude for what he did for them in the life-long battle against process and other patents, and it is an unfortunate fatality that he should have died just before the Golden Anniversary of the Illinois State Dental Society and of the Chicago Dental Society, whereat it had been the intention of his confrères to publicly honor him. As it is, we understand that a Memorial Meeting will be held by the Chicago Dental Society.

While, perhaps, Dr. Crouse has made his greatest imprint upon the minds of the dental profession throughout the world in consequence of his strenuous battle for their rights, he made an even greater impression upon his clientèle, and he was one of the finest dental practitioners in the United States, one of the masters of the restoration carious teeth with gold foil. The writer has seen many fillings from his hand which had already served ten, twenty and even thirty years without a mar upon their surfaces or leakage at any of the borders.

Dr. Crouse was likewise the president of the Dental Protective Supply House and published the *Dental Digest* until 1908.

He was married in 1870 to Miss Ruma A. Hull, of Clinton, N. Y. His wife and one son survive him.

His body was cremated and his ashes interred at Rose Hill Cemetery, Chicago, January 19, 1914. R. O.

In Memoriam Resolutions Adopted by the New Jersey State Dental Society.

Dr. Charles S. Stockton.

Whereas, It has pleased our Heavenly Father to remove to a higher sphere our last Charter Member, Charles S. Stockton, D.D.S., therefore be it

Resolved, That we mourn the loss of a true friend, a conscientious advisor, a noble Christian character, an able and forceful speaker and debator, always interested in the higher motives of our society, and the uplifting of our profession; the broadening of our sphere of usefulness and the placing of our profession on the level with the other learned professions.



Always willing and anxious to help the young man in his endeavor for higher usefulness, and ever having an interest single to the good of humanity.

Resolved, That a copy of these resolutions be spread upon the minutes of our society, sent to the widow, and published in the dental journals.

SAMUEL C. G. WATKINS, GEORGE M. HOLDEN, HERBERT S. SUTPHEN, Chairman.

Dr. Benry Augustus Bull.

Dr. Henry Augustus Hull was born at Columbia, Pa., October 19, 1831. Died March 5, 1913, at his home in New Brunswick, N. J., in which city he lived for forty years. The deceased traced his genealogy back to George Hull, of Fairfield County, Conn., who sailed from Plymouth, England, on the ship *Mary and John*, and arrived May 30, 1630, at a place on Nantasket, afterward called "Hull."

Although he lived beyond the allotted time of life, Dr. Hull always took an active interest in everything going on. His military bearing on the street has been greatly missed by those in the habit of daily meeting him. Members of the same profession who knew him well familiarly called him "Pa Hull," which he accepted with pleasure. He had a strong social nature and craved close companionship, but unfortunately death claimed those near and dear to him, so his home life was a lonely one for a number of years. Being fond of travel, it was his fortune to have covered all of the principal cities in every State in the Union.

Dr. Hull served his country in the Civil War from its beginning to the end, and served his city in several important positions. Several local organizations in which he held office sought his advice. His Masonic career was long and extended through all its rites. The Central Dental Association of Northern New Jersey and the New Jersey State Dental Society honored him with their highest gift. For several years and up to the summer before his death, Dr. Hull held the office of treasurer of the State Dental Society. Its membership had grown to such proportions he felt that the work should be taken up by a younger man, so resigned. Although taking no part in the society's debates, he could always be depended upon to support any measure which would advance the society's interest.

Whereas, It has pleased Almighty God to remove from our midst by death our esteemed associate, be it

Resolved, That we, the New Jersey State Dental Society, feeling keenly the loss we have sustained, hereby express our sorrow at the sud-

den termination of the career of Dr. Henry Augustus Hull, and that this society hereby extend to his immediate family its sincere sympathy, and be it further

Resolved, That a copy of these resolutions be spread upon the minutes of the society and that a copy thereof be sent to the dental journals for publication.

> HARVEY IREDELL, D.D.S., FRANK L. HINDLE, D.D.S., WILLIAM E. TRUEX, D.D.S., Committee.

Dr. norman W. Kingsley.

Resolved, That we mourn the loss of a true friend, a conscientious advisor, a noble Christian character, an able and forceful speaker and debator, always interested in the higher motives of our society, and the uplifting of our profession; the broadening of our sphere of usefulness, and the placing of our profession on the level with the other learned professions.

Always willing and anxious to help the young man in his endeavor for higher usefulness, and ever having an interest single to the good of humanity.

Resolved, That a copy of these resolutions be spread upon the minutes of our society; sent to the widow, and published in the dental journals.

Signed by committee:

Dr. W. W. HAWKE, Dr. R. Ottolengui, Dr. J. S. Curtis.

Dr. Edwin Chew.

Whereas, It has pleased Almighty God to take out of this world the soul of Dr. Edwin Chew, an honorary member of the New Jersey State Dental Society, a man of character and resourcefulness, a good workman and a respected member of the community where he passed the whole of his life; therefore be it

Resolved, That we put on our minutes a record of his character and work, both of which were far above the ordinary. He was a self-made man, and a good one, well esteemed by all who knew him and commanding the respect of clients, friends and acquaintances. He began his work in the days when each man was compelled to make many of the instruments and teeth he used and this he did successfully, finding the necessary materials close at hand and out of our native spar and silex carving by hand teeth which are the admiration of the men of to day.



He read many of the journals, advanced with the profession and at the close of his long and busy life, though eighty-four years old, was among the leaders in his special line. Owing to advancing years he was unable to attend the meetings of the society, and was elected an honorary member, continuing so until his death.

Resolved, That a copy of these resolutions be sent to the family and printed in dental journals.

Signed by the committee:

Joseph G. Halsey, J. E. Jaquette, S. G. Wallace.

Dr. William P. Richards.

Whereas, In view of the loss we have sustained by the decease of our friend and associate, Dr. William P. Richards, and of the still heavier loss sustained by those who were nearest and dearest to him; therefore be it

Resolved, That it is a just tribute to the memory of the departed to say that in regretting his removal from our midst we mourn for one who was in every way worthy of our respect and regard.

Resolved, That we sincerely condole with the family of the deceased on the dispensation with which it has pleased Divine Providence to afflict them, and commend them for consolation to Him who orders all things for the best.

Resolved, That this heartfelt testimonial of our sympathy and sorrow be forwarded to the family of our departed member by the secretary of this meeting.

M. R. Brinkman, H. S. Sutphen, S. C. G. Watkins.

Dr. Lewis S. Marsh.

Whereas, Dr. Lewis S. Marsh, an honored member of this society, having been removed from us by the Divine Providence, it is but fitting that we should make a record of our loss thus sustained; therefore be it

Resolved, That our sympathies be extended to his family in their bereavement, while we cannot but feel grateful to the Giver of all, that he was permitted to live such a long and useful life. Be it therefore

Resolved, That these resolutions be incorporated in the minutes of this society and that a copy be transmitted to the family of the deceased.

EDWARD D. FROST, Chairman, OSCAR ADELBERG, W. WOOLSEY.



National Society Meetings.

- AMERICAN INSTITUTE OF DENTAL TEACHERS, Ann Arbor, Mich, January 28-30, 1915.
 - Secretary, Dr. J. F. Biddle, 517 Arch St., N. S., Pittsburgh, Pa.
- NATIONAL DENTAL ASSOCIATION, Rochester, N. Y., July 7-10, 1914. Secretary, Dr. Otto U. King, Huntington, Ind.
- AMERICAN SOCIETY OF ORTHODONTISTS, Toronto, Canada, July 2-3, 1914. Secretary, Dr. Wm. Ernest Walker, 629-631 Maison Blanche, New Orleans, La.
- PANAMA-PACIFIC DENTAL CONGRESS, San Francisco, Cal., 1915.

 Secretary, Dr. Arthur M. Flood, 240 Stockton St., San Francisco, Cal.
- CANADIAN DENTAL ASSOCIATION, Winnipeg, Manitoba, May 26, 27, 28, 20, 1014.
 - Secretary, Dr. M. H. Garvin, 314 Somerset Blk., Winnipeg, Manitoba, Canada.

State Society Meetings.

- ARKANSAS STATE DENTAL SOCIETY, Little Rock, Ark., June 4, 5, 6, 1914. Secretary, Dr. C. L. Hunt, Fort Smith, Ark.
- California State Dental Association and Southern California Dental Association, Yosemite Valley, Cal., June 29-30, July 1-2, 1914.
 - Secretary, Dr. E. E. Evans, Union Savings Bank Bldg., Oakland, Cal.



COLORADO STATE DENTAL SOCIETY, Manitou, Colo., June 18-20, 1914. Secretary, Dr. E.-W. Spencer, 120 Pope Block, Peblo, Colo.

CONNECTICUT STATE DENTAL ASSOCIATION, Hartford, Conn., April 21-23, 1914.

Secretary, Dr. Arthur V. Prentis, New London, Conn.

FLORIDA STATE DENTAL SOCIETY.

Secretary, Dr. Alice P. Butler, Gainesville, Fla.

GEORGIA STATE DENTAL SOCIETY, Atlanta, Ga., June 4-6, 1914. Secretary, Dr. M. M. Forbes, Candler Bldg., Atlanta, Ga.

INDIANA STATE DENTAL ASSOCIATION, Indianapolis, Ind., May 19-21, 1914.

Secretary, Dr. Otto U. King, Huntington, Ind.

IOWA STATE DENTAL SOCIETY, Des Moines, Iowa, May 5-7, 1914. Secretary, Dr. C. M. Kennedy, Des Moines, Iowa.

LOUISIANA STATE DENTAL SOCIETY, Baton Rouge, La., June 4-6, 1914. Secretary, Dr. E. B. Ducasse, Maison Blanche, New Orleans, La.

Maine Dental Society, Augusta, Me., June 25-27, 1914. Secretary, Dr. I. E. Pendleton, Lewiston, Me.

MARYLAND STATE DENTAL SOCIETY.

Secretary, Dr. F. W. Drew, 701 N. Howard St., Baltimore, Md.

Massachusetts Dental Society, Boston, Mass., May 7-9, 1914. Secretary, Dr. A. H. St. C. Chase, Everett, Mass.

MICHIGAN STATE DENTAL SOCIETY, Detroit, Mich., April 9-11, 1914. Secretary, Dr. F. Ward Howlett, Jackson, Mich.

MINNESOTA STATE DENTAL ASSOCIATION, Duluth, Minn., August 6-8, 1914.

Secretary, Dr. Benjamin Sandy, Syndicate Bldg., Minneapolis, Minn. Missouri State Dental Association, St. Louis, Mo., April 21-22, 1914. Secretary, Dr. S. C. A. Rubey, Warrensburg, Mo.

Mississippi Dental Association, Vicksburg, Miss., June 23-25, 1914. Secretary, Dr. M. B. Varnado, Osyka, Miss.

Montana State Dental Society, Great Falls, Montana, June, 1914. Secretary, Dr. F. W. Adams, 14-15 Chicago Block, Billings, Montana.

Nebraska State Dental Society, Lincoln, Neb., May 19-21, 1914. Secretary, Dr. H. J. Porter, Cambridge, Neb.

New Hampshire State Dental Society, Weirs, N. H., June 17-19, 1914.

Secretary, Dr. Louis I. Moulton, Concord, N. H.

New Jersey State Dental Society, Ocean Grove, N. J., July 15-18, 1914. Secretary, Dr. John C. Forsyth, 430 E. State St., Trenton, N. J.

New York State Dental Society, Albany, N. Y., May 14-16, 1914. Secretary, Dr. A. P. Burkhart, 52 Genesee St., Auburn, N. Y.

NORTH CAROLINA DENTAL SOCIETY, Hendersonville, N. C., June 24-27, 1914.

Secretary, Dr. J. Martin Fleming, Raleigh, N. C.

Ohio State Dental Society, Columbus, O., December 1-3, 1914. Secretary, Dr. F. R. Chapman, 305 Schultz Bldg., Columbus, O.

PENNSYLVANIA STATE DENTAL SOCIETY, Phila., Pa., June 30, July 1-2, 1914.

Secretary, Dr. Luther M. Weaver, Phila., Pa.

Tennessee State Dental Association, Chattanooga, Tenn., June 4-6, 1914.

Secretary, Dr. C. O. Rhea, 625½ Church St., Nashville, Tenn.

TEXAS STATE DENTAL ASSOCIATION, Fort Worth, Texas, April 13-17, 1914.

Secretary, Dr. J. G. Fife, Dallas, Texas.

UTAH STATE DENTAL SOCIETY, Logan, Utah, June 19-20, 1914.

Secretary, Dr. I. P. Stewart, 1st Nat. Bank Bldg., Logan, Utah.

VERMONT STATE DENTAL SOCIETY, Rutland, Vt., May 21-23, 1914. Secretary, Dr. P. M. Williams, Rutland, Vt.

WEST VIRGINIA STATE DENTAL SOCIETY, Huntington, W. Va., August 12-14, 1914.

Secretary, Dr. A. C. Plant, 802 Schmulbach Bldg., Wheeling, W. Va. Wisconsin State Dental Society, Fond-du-Lac, Wis., July 14-16, 1914.

Secretary, Dr. O. G. Krause, Wells Bldg., Milwaukee, Wis.

Che American Dental Society of Europe.

The forty-first annual meeting of the American Dental Society of Europe will be held in Paris, France, July 30, 31-August 1, 1914, at the Hotel Continental. All members of the profession are cordially invited to be present.

G. B. HAYES, Secretary.

17, Ave. de l'Opéra, Paris, France.

Mississippi Dental Association.

The thirty-ninth annual meting of the Mississippi Dental Association will be held in Vicksburg, June 23, 24 and 25, 1914.

M. B. Varnado, Secretary.

Osyka, Miss.



Towa State Dental Society.

The fifty-second annual meeting of the Iowa State Dental Society will convene at Des Moines, Iowa, May 5, 6 and 7, 1914, beginning Tuesday, May 5th, at 9 A. M. Elaborate clinics and lectures and a large exhibit will be presented.

Further information will be furnished upon request from ethical practitioners of other States contemplating a visit to the meeting, and to whom we extend a cordial invitation.

Exhibitors desiring space should apply to Dr. W. J. Cameron, Des Moines, Iowa.

C. M. Kennedy, Secretary.

Des Moines, Iowa.

Susquehanna Dental Association of Pennsylvania.

The annual meeting of the Susquehanna Dental Association will be held at the Water Gap House, Delaware Water Gap, Pa., May 26, 27 and 28, 1914.

E. J. Donnegan, Secretary, Scranton, Pa.

W. C. MIDDAUGH, President, Easton, Pa.

Maryland Board of Dental Examiners.

The Maryland Board of Dental Examiners will meet for examination of candidates for certificates May 27-28, 1914, at the dental department of the University of Maryland at 9 A. M.

For application blanks and further information apply to

F. F. DREW, Secretary.

701 N. Howard St., Baltimore, Md.

Michigan State Board.

The next meeting of the Michigan State Board of Dental Examiners will be held at the Dental College, Ann Arbor, commencing Monday, June 15th, and continuing through the 20th. For application blanks and full particulars address

F. E. SHARP, Secretary.

Port Huron, Mich.

Michigan Licentiates Please Notice.

In compliance with Section 5 of Public Act No. 183, of 1913, which is as follows:

"Every registered dentist shall, on or before the first day of May of each year, except the one in which he is registered, pay to the Secretary of the Board of Dental Examiners a license fee of one dollar. The year for which a fee shall be paid shall begin on October 1st following the May when it becomes due, and end the succeeding September 30th. In case any person defaults in paying said fee, his license may be revoked by the Board of Dental Examiners, on thirty days' notice in writing from the Secretary, unless within said time said fee is paid."

Notices will be mailed to all dentists registered in Michigan, to their last known address, on or before April 15, 1914. Failure to receive such notice will not be an exemption or an excuse for non-payment. In such cases all persons should notify the Secretary, giving their correct address. This also applies to all those living outside the State.

Respectfully,

F. E. SHARP, Secretary.

Port Huron, Michigan.

Upper Peninsular Dental Society.

The next meeting of the Upper Peninsula Dental Society of Michigan will be held in Escanabe, Mich, June 5-6, 1914.

Dr. C. A. Cotton, Secretary.

Escanaba, Mich.

Louisiana State Dental Society.

The thirty-sixth annual meeting of the Louisiana State Dental Society will be held in Baton Rouge, La. June 4-6, 1914.

Dr. E. B. Ducasse, Secretary.

Maison Blanche, New Orleans, La.

Maine Board of Dental Examiners.

A meeting of the Maine Board of Dental Examiners will be held at the State House, Augusta, Me., June 23 and 24, 1914, for the examination of applicants. For applications and further information apply to I. E. Pendleton, D.M.D., Secretary.

54 Pine St., Lewiston, Me.



Association of Military Dental Surgeons of the United States.

On January 24, 1914, at a meeting held at the Army and Navy Club, New York City, the Association of Military Dental Surgeons of the United States was organized, the membership in which is open to dental surgeons, acting dental surgeons of the United States Army and ex-dental surgeons.

The officers chosen to serve until the Rochester meeting (at which time a new election will be held) are:

President, Wm. C. Fisher; Vice-President, John D. Milliken, San Francisco; Treasurer, Ralph W. Waddell; Secretary pro tem, Wm. C. Fisher, 373 Fifth Avenue, New York City.

Advisory Council Ex-Dental Surgeons: O. M. Sorber, Updyke & Foster, Chas. D. Long, E. J. Craig, Samuel Hussey, H. C. Reitz, John S. Marshall, Wm. Ware.

The object of this organization is to foster a higher esprit de corps, encourage the interest of the dental profession at large in the personnel of the dental corps and to collect for the dental profession such data and information pertinent to the practice of dentistry in the military world, as may from time to time be demed worthy of presentation.

Permanent organization will be effected at Rochester, New York. the afternoon of the first day of the meeting of the National Dental Association, July 7th.

New Jersey State Board of Dental Examiners.

The New Jersey State Board of Dental Examiners will hold their regular annual meeting and examination in the Assembly Chamber of the State House, Trenton, N. J., on June 29, 30, and July 1, 1914. License fee, \$25.00. No interchange of license. Applications must be filed *complete* at least ten days before date set for examination.

All applicants for a license to practice dentistry in New Jersey "shall present to said Board a certificate from the Superintendent of Public Instruction, showing that before entering a dental college, he or she had obtained an academic education consisting of a four years' course of study in an approved public or private high school, or the equivalent thereof." Therefore, the secretary will issue application blanks to applicants only upon the presentation of the required dental certificate from the Superintendent of Public Instruction, Trenton, N. J.

A bridge, consisting of three or more teeth, exclusive of abutments, and one Richmond Crown (in gold), will be required, mounted and articulated, as a practical test in Prosthetic Dentistry, in place of a full

set of teeth soldered upon a gold or coin silver plate hitherto required. For further particulars apply to

Alphonso Irwin, D.D.S., Secretary. 425 Cooper St., Camden, N. J.

Wisconsin State Roard of Dental Examiners.

The Wisconsin State Board of Dental Examiners will convene in Milwaukee at Marquette University, on June 22, 1914, at 2:00 o'clock P. M., for examination of applicants to practice in Wisconsin.

High school diploma, application and \$25.00 fee to be filed with the secretary fifteen days prior to above date.

Dental diploma to be presented in advance of the examination.

Junior dental students presenting a clear card for two years' unconditioned work from a reputable dental college and filing a high school diploma, or its full equivalent, will be permitted to participate in the theory examination in the following six major subjects:

Anatomy, Physiology, Histology, Chemistry, Bacteriology, Materia Medica.

The grades made in these subjects will be credited at subsequent examinations.

Special application blanks for this examination and \$10.00 fee, together with high school credits to be filed fifteen days in advance.

W. T. HARDY, Secretary, 1404 Majestic Bldg., Milwaukee, Wis.

F. A. TATE, President.

Pennsylvania Board of Dental Examiners.

The next regular examination of the Pennsylvania Board of Dental Examiners will be held in Philadelphia and Pittsburgh on Wednesday, Thursday, Friday and Saturday, June 10, 11, 12 and 13, 1914. Application blanks can be secured from the Department of Public Instruction. Harrisburg. Any further information can be secured from

ALEXANDER H. REYNOLDS, Secretary.

4630 Chester Ave., Philadelphia.